The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LIX, NO. 7 CHICAGO, ILLINOIS AUGUST 17, 1912

A BROADER VIEW OF PITYRIASIS ROSEA *

GEORGE HENRY FOX, M.D.

NEW YORK

The text of my brief remarks may be found on the first page of a carefully written and valuable paper read before the Section on Dermatology, nine years ago, by Dr. Ludwig Weiss.[1] In reference to Gibert, Dr. Weiss says, "His classical description is recognized as the standard by which the affection which bears his name is diagnosed." This is an accurate statement of a fact, and against this fact or condition of affairs I would like to protest. This classical description of what is now a well-known, if not a common, affection, reads as follows:

> **Small furfuraceous spots, very lightly colored, irregular, hardly larger than the nail, numerous and near each other though always separated by an interval of healthy skin, pruriginous, spreading on the upper portion of the body, especially the neck, chest and upper portion of the arms, and extending in succession downward to the thighs, so that the total duration of the eruption, which disappears gradually from the parts first affected while extending downward, generally lasts six or eight weeks. The eruption, more common in women than in men, is seen more frequently during the summer season. It is chiefly seen in childhood and in individuals with delicate white skin.**

After years of clinical study of this disease by competent observers both in Europe and America, is it incumbent on us still to recognize this description as our standard in the determination of what constitutes pityriasis rosea? By no means! Dr. Weiss expresses surprise that Gibert failed to describe the circinate form of lesions and adds, "As the disease, in almost every instance, occurs in the maculo-annular form we must infer that Gibert has seen a peculiar macular form of it or that there may be two forms of pityriasis rosea." I am willing to join heartily with Dr. Weiss in shouting, "Glory to Gibert!" for his early though incomplete description of the disease but must remain of the opinion that he knew far less about it than you or I and that he selected for it a rather poor name.

The name "pityriasis," meaning a bran-like desquamation of the skin, is as old as Hippocrates and most appropriate to the condition of skin to which it has so long been applied. The name "pityriasis rosea" has now been in use for fifty years and one would be rash to suggest a change even though he might regard the term "pityriasis circinata," used later by Hardy, Horand and other French writers, as a much better one. The roseate tint, seen only in the developing lesions, is by no means a striking feature of the picture which the disease usually presents and does not compare in diagnostic importance with the peculiar outline of the lesions.

Bazin, Duhring and others have described cases of this disease under the title of "pityriasis maculata et circinata," which is unnecessarily long. While the adjective "circinata" is admirably adapted to many, if not to most cases, objection might be justly raised to the use of the term "maculata." A macule, by common consent, has long been defined as a smooth cutaneous lesion. In this strict use of the word a squamous macule is an absurdity. The lesions in the disease under discussion may be discrete and disseminate and even maculiform, but they cannot properly be termed "macular," "maculous" or "maculate." In some cases of psoriasis, the desquamation is fine and bran-like and we might as well speak of "psoriasis maculata" as of "pityriasis maculata."

But let us pass to the symptomatology of the disease which is far more important than its nomenclature. Gibert states, and so does nearly every modern text-book writer, that the lesions are isolated and of finger-nail size. This size may be a fair average in many cases but the lesions are often much larger. Sometimes they become confluent and extensive marginate patches may result, which, if the eruption has not been observed from the outset, are commonly regarded as seborrheic dermatitis.

In many cases, the lesions are punctate or guttate in size, as well as nummular, and may remain so during the course of the eruption. In most cases, a considerable variation is found in the size of the lesions as may be noted in the accompanying illustrations. The punctate and guttate varieties of the eruption are not uncommon, but the confluent and diffuse variety with a marginate border is rare, generally unrecognized and rarely mentioned in text-book descriptions. These diffuse and marginate patches may occur on both trunk and extremities, but manifest a predilection for the axilla and groin. Considering its multiform lesions the descriptive adjectives, "punctata," "guttata," "nummulata" and "diffusa" are quite as applicable to cases of pityriasis rosea as they are to cases of psoriasis.

It is indeed strange that Gibert failed to mention the circinate lesions of this disease observed by all later writers. Erasmus Wilson had previously described a circinate eruption under the name of "lichen annulatus serpiginosus," which we now occasionally see and which I believe is a circinate form of pityriasis rosea with a follicular or papular border. I present an excellent illustration (Fig. 2) of this eruption and imagine that many of you will shake your heads ominously and say that it is not a case of true pityriasis rosea. But a precisely similar lichenoid ring is seen on the thigh in the adjoining illustration (Fig. 5), and this was an almost typical case of Gibert's disease, even if it did not correspond

* Read in the Section on Dermatology of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. Weiss, L.: THE JOURNAL A. M. A., July 4, 1903, p. 20.

with his imperfect description. The serpiginous tendency of many circinate lesions is not mentioned in the descriptions of this affection and may be well studied in the two illustrations representing the back of the same patient taken at an interval of two weeks (Figs. 3-4).

Indeed, our text-book descriptions of pityriasis rosea need many additions and corrections. In one of the best, contributed by Thibierge to "La Pratique Dermatologique," the writer speaks of clinical forms and mentions a superior cervical localization which never extends beyond the submaxillary region. In the last case I saw, three days ago, a woman presented elongated lesions on the neck, typical medallions on the shoulder and a fading primitive plaque on the check just above the angle of the jaw where, as she stated, the eruption had begun three weeks before.

Fig. 1.—Pityriasis rosea of the circinate type, confluent, on chest, showing tendency to invade the axillary region.

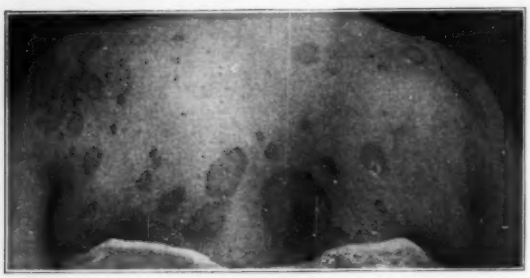

Fig. 2.—Back of same patient.

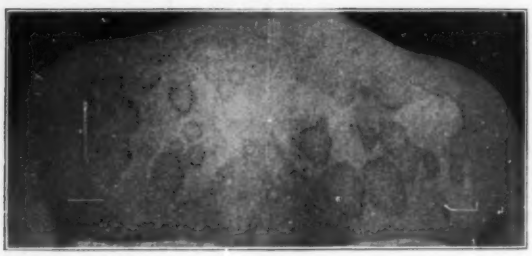

Fig. 3.—Showing serpiginous development of lesions on back of same patient.

In speaking of pityriasis rosea of the axilla and groin I realize that I am treading on dangerous ground, and will certainly be accused of confounding diseases which are distinct clinical entities. If I were to assert that Hebra's eczema marginatum is a form of pityriasis rosea, it would doubtless suggest a commission *de lunatico inquirendo*. But I will make bold to offer the suggestion that there exists a clinical kinship and that for every step of the long distance between them a case in the clinic may be found. In the illustrations showing eruption of the inguinal region (Figs 11-13), the first may or may not be accepted as a case of pityriasis rosea. The second would be less likely to be accepted as such were it not for the typical "primitive plaque" on the abdomen. When such an eruption becomes gradually transformed into the one seen in the next illustration (Fig. 13), which frequently happens, the disease usually changes its name as well as its character. In the illustrations showing eruption of the axilla various gradations between disseminate and superficial scaly patches and the large single marginate patch may be seen.

Fig. 4.—Lichen annulatus serpiginosus of Wilson (lesions on chest). Some will regard this as distinct from pityriasis rosea because it is limited in extent and runs a chronic course, but according to high authority and clinical study pityriasis rosea may be chronic and occupy a limited area.

Fig. 5.—Punctate and circinate lesions on buttock and thigh. The latter are clinically identical with those seen on the chest in Case 4.

Fig. 6.—Confluent circinate lesions on arm and forearm.

Vidal, in describing pityriasis circinata et marginata which is generally conceded to have been nothing other than Gibert's disease and not due as he claimed to a special microsporon, says that in certain regions, as the axilla and groin, the lesions may become confluent and form marginate patches and that when this affection has existed several months in the axilla or groin it may provoke an intertrigo or even an eczema, a form of Hebra's eczema marginatum. That pityriasis rosea may become irritated and eczematous, especially on the legs,

is shown by cases in which the acute inflammatory symptoms have almost obscured the original circinate eruption.

Wilson, in his description of lichen annulatus which included many features of pityriasis rosea, mentions one form occurring about the perineum which he termed lichen marginatus and points out its resemblance to eczema marginatum. Stelwagon, in discussing eczema seborrhoicum, speaks of cases in which patches in the axillæ and about the genitalia appear as flat scaly spots or papules often disk-like or circinate with but a slight or

Fig. 7.—Pityriasis rosea diffusa of flexor surface of the forearm, a condition not described in text-books.

Fig. 9.—"A case for diagnosis." Pityriasis rosea *vel* eczema marginatum? Lesion in axilla.

Fig. 10.—Eczema marginatum, so-called, in axilla.

Fig. 8.—Pityriasis rosea of chest, arm and axilla.

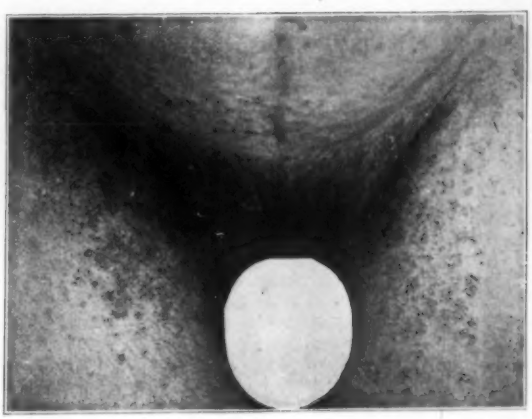

Fig. 11.—Pityriasis rosea of inguinal region.

moderate scaliness. When we consider the great similarity if not identity of these scaly rings, have we not as much reason for associating such cases with pityriasis rosea as with eczema, which is notably a disease manifesting no tendency whatever to circinate arrangement? But some one will say that these lesions, like circinate scaly lesions on the chest and elsewhere, are often persistent and do not run a definite course. This naturally raises the question whether pityriasis rosea is always an acute affection.

If we follow Gibert's definition as subserviently as many do, a case ought not to last longer than eight weeks. Should it happen to do so, it must be at once transferred to that clinical catch-all, seborrheic dermatitis. For many years I have been convinced that pityriasis rosea, like eczema, psoriasis and lichen planus, occurs in both an acute and a chronic form. It is true that the chronic form is an exception to the rule, while in lichen planus it is the acute form which is exceptional. I will not take up time by argument on this question but will merely say that in a recent glance at the literature of this subject I have found that Fournier reports a case characterized by persistence and confluence of lesions on the trunk. Hallopeau mentions a case lasting four years and Besnier claims to have seen many cases of prolonged pityriasis rosea. Men of such great experience and competence, fellow-countrymen and possibly students of Gibert, ought surely to know a case of pityriasis rosea when they see it.

In conclusion, I must confess my inability to state precisely what pityriasis rosea is. I have tried to show that it is not the restricted disease which is commonly portrayed in our text-books and would urge on my colleagues who are younger and more ambitious than I to write an accurate description of the disease in all its clinical phases, based on clinical study and unhampered

by the moss-grown misstatements of dermatologic literature. To the neophyte, the text-book offers a fruitful field for the study of skin diseases serving as a guide and interpreter. But for the experienced student of dermatology, versed in the literature of his subject and with eyes sharpened by years of careful observation, the clinic should take the place of the text-book as the basis of dermatologic knowledge. Unfortunately it often fails to do this. A profound respect for tradition and a slavish adherence to the views which our predecessors have expressed lead many of us to accept statements and opinions which are controverted by the facts of every-day experience. To Gibert, who first used the name "pityriasis rosea" and who accurately described some of its clinical features, great credit is certainly due. But he did not claim to say the last word respecting this disease and it is a pity that so many of us who have had equal opportunities for clinical study are so inclined to base our opinions on what Gibert and others have said instead of on what we ourselves have seen or may see in any large dermatologic clinic.

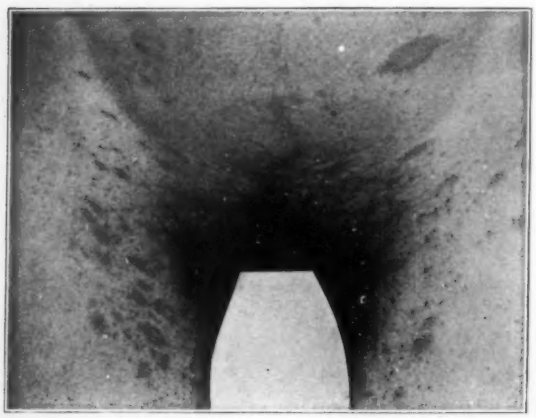

Fig. 12.—An eruption in inguinal regions which few would admit to be pityriasis rosea were it not for the unmistakable "primitive plaque" seen on the abdomen.

616 Madison Avenue.

ABSTRACT OF DISCUSSION

DR. A. RAVOGLI, Cincinnati: I remember that in the Vienna school, the elder Hebra called an eruption of this kind herpes tonsurans maculosus corporis, and Kaposi formerly believed that it was the same disease as that described by Gibert. I have seen several cases with peculiar, reddish-brown patches distributed all over the body, more prominent at the edges, accompanied by much itching and sometimes by scaling. In some of these lesions, at times, I have found tiny spores, probably of the herpes tonsurans; for this reason I still believe that the disease of Gibert is nothing more than a generalized herpes tonsurans maculosus corporis, which affects only the very superficial layers of the epidermis, and which disappears under proper applications.

DR. JOSEPH ZEISLER, Chicago: There is really a great deal more to this subject than is generally accepted by those who judge this disease only by what they read in text-books. I have carefully listened to what Dr. Ravogli said, because I was raised in the same dermatologic atmosphere, and I did not know what pityriasis rosea was until after I had left Vienna, although I did know what herpes tonsurans maculosus was. Since then I have learned to identify the typical cases of pityriasis rosea, those showing oval rings which run in a horizontal direction on the covered portions of the body, of a salmon-red color and corresponding to the original description of Gibert. But occasionally I see a case about which I am in doubt, and which I would rather designate as herpes tonsurans maculosus. To illustrate the diagnostic difficulties in connection with this subject I might mention a case under my observation for several years which began apparently as a typical pityriasis rosea, but which gradually developed into a classical case of pemphigus foliaceus.

DR. H. H. HAZEN, Washington, D. C.: In my clinical work among the negroes I have seen a type of eruption that comes on either abruptly or slowly, or with dry, scaly, whitish, well-defined macules ranging in number from perhaps one to fifty or a hundred distributed over trunk and limbs, and resembling more or less a seborrheal condition. These lesions last from two weeks to several years. I have never succeeded in finding ringworm spores, and the histologic examination reveals practically nothing. Whether this is an unusual form of pityriasis rosea or not I do not know.

DR. RICHARD L. SUTTON, Kansas City, Mo.: I think we have three separate and distinct affections, acute seborrheic dermatitis, pityriasis rosea and tinea corporis. In some of these, as Dr. Zeisler has said, we occasionally have borderline cases which even an expert sometimes fails to diagnosticate correctly. I have no doubt regarding the clinical identity of pityriasis rosea. The cases to which Dr. Hazen has referred, I would consider as examples of seborrheic dermatitis, and some of the cases reported by Dr. Fox were undoubtedly seborrheic at base. While some of the borderline cases are not sharply demarcated, that is not a sufficient excuse for denying the existence of pityriasis rosea as a distinct clinical entity.

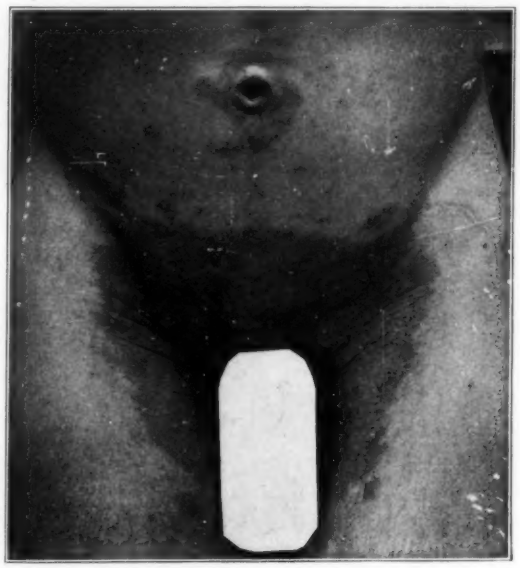

Fig. 13.—An eruption over pubes, inguinal regions and inner surface of thighs of practically similar nature which one might justly call pityriasis rosea diffusa, but which many would call eczema seborrhoicum despite the facts that the eruption is neither eczematous nor due to a flow of sebum.

DR. WILLIAM S. GOTTHEIL, New York: I agree with Dr. Zeisler that the older we grow, the less can we regard the diagnosis in some of these cases as easy, yet we can recognize two distinct types of this eruption, namely, eczema marginatum and pityriasis rosea. In the first, we have a recognized parasite; not so in the latter. Pityriasis rosea runs a definite course, whether short or long, while eczema marginatum may last forever.

DR. WILLIAM B. TRIMBLE, New York: I agree with Dr. Fox, in that we should take a broader view of this condition.

These cases of pityriasis rosea are not always the same clinically. The lesions are sometimes punctate, sometimes guttate, and again annular, and they are not always confined to the trunk. I have seen them on the face and also as far down on the upper extremity as the wrist. Cases in which there are numerous small disseminated papules have frequently been called pityriasis rosea, and one such case was shown at a recent meeting of the New York Dermatological Society. I did not think the case was one of pityriasis rosea, and am still skeptical about accepting a distinct papular variety of the disease. The papular cases, I believe, belong to some other affection, which we do not as yet fully understand.

DR. HENRY C. BAUM, Syracuse: I had rather definite ideas of pityriasis rosea until two years ago, when I ran across a case which developed in a most typical manner and which has persisted. A recent photograph shows as clear and distinct a picture of pityriasis rosea to-day as it was two years ago. I have done all I could for the patient, but in spite of everything the eruption remains unchanged. This has naturally tended to shake my confidence in the correctness of my diagnosis, as I cannot explain why the eruption should persist, in spite of prolonged baths, *x*-ray treatment, etc.

DR. H. J. F. WALLHAUSER, Newark, N. J.: I agree with Dr. Gottheil that pityriasis rosea is really a clinical entity and quite distinct from the other varieties of pityriasis. The fact that it appears in a definite way, runs a course of several weeks and disappears spontaneously, would seem sufficient evidence to bear out this contention. I have at present, under my observation, a case very similar to the one mentioned by Dr. Baum. In this case I first made a diagnosis of pityriasis rosea, but as the eruption failed to improve I was inclined to regard it as syphilitic. I next thought of a beginning psoriasis, but it failed to respond to treatment, and after six or eight months, as no change occurred in the character of the eruption, the diagnosis was changed to erythrodermie pityriasique en plaques disséminées, which diagnosis has since been verified.

DR. GEORGE H. FOX, New York: It is easy to say that we have three distinct varieties of this form of eruption, but as long as we have confused ideas of what these diseases are, are we any better off? I think it is generally agreed that pityriasis rosea is not parasitic, but I agree that from the clinical standpoint there are some cases in which the lesions are almost indistinguishable from parasitic cases without the aid of microscopic or without long-continued observation. The borderline cases to which Dr. Zeisler referred, which we see in the clinic and do not read about in the text-books, are apt to give us a good deal of trouble. If we say that pityriasis rosea runs its course in six or eight weeks, that would settle it, but frequently it does not. We must take things as they are —not as we would like to have them—and I would suggest that some of my younger colleagues study their cases of pityriasis rosea carefully and describe them accurately, for it is only by such work that we can be delivered from many of the inaccurate statements with which dermatologic literature is filled.

Artificial Rubber.—The announcement is made by Prof. W. H. Perkin, son of the illustrious Sir William Perkin, founder of the coal tar dye industry, that synthetic rubber can now be made on a commercial basis. It has been known since 1875, says the *Scientific American*, that a certain hydrocarbon called isoprene may be obtained from rubber which can under certain conditions be reconverted into rubber. A body of chemists, including Professor Perkin, Sir William Ramsay, Professor Fernbach of Paris, and Dr. F. E. Matthews have finally perfected a fermentation process by which starchy materials made from Indian corn or potatoes and water are converted into fusel oil. The higher alcohols are separated from this by fractional distillation and are then converted into isoprene by successive treatments with hydrochloric acid, chlorin and soda lime. Polymerization is then brought about by contact with metallic sodium, forming the rubber. This latter reaction was discovered accidentally by Dr. Matthews. It is his belief that the rubber can be made for about 60 cents a pound; natural Para rubber sells at $1.35 a pound.

AN EXPERIMENTAL STUDY OF THE TREATMENT OF CANCER WITH THE BODY FLUIDS

EDWARD J. ILL, M.D.
AND
WILLIAM D. MININGHAM, M.D.
NEWARK, N. J.

On Dec. 5, 1906, we operated on Mrs. L. B., aged 43, for carcinoma of the right breast. The operation performed was a typical Halsted. The patient remained well until August, 1908, when she noticed a gradual enlarging of the abdomen accompanied by a feeling of weight and soreness, increasing difficulty with breathing, rapid heart action and occasional attacks of nausea and vomiting.

In October, 1908, her abdomen had enlarged to such an extent that her physician, Dr. Lippincott, tapped her for the first time. Dr. Charles L. Ill saw her at this time and discovered a very much enlarged and nodular liver nearly filling the entire abdomen. It was his opinion that the woman could live but a short time. Five weeks after the October tapping, she was tapped a second time. The intervals of tapping were gradually decreased until she was tapped every six days.

In January, 1910, when our attention was directed to her she had been tapped sixty-four times. At this time she was fairly well nourished and was by no means cachectic. The lips were slightly cyanosed. The breast scar was normal and showed no recurrence. Her heart, lungs and kidneys were apparently normal. No liver tumor could be made out. She was quite comfortable except when the abdomen distended with fluid. During the day she was up and about, spent much of her time sewing or reading and took her meals with the rest of the family at the table. She was tapped for the ninety-sixth time on July 7, 1910. The average amount obtained at each tapping was 10 liters.

When first seen by us a urinary analysis showed the following: turbid from amorphous urates; specific gravity, 1.026; reaction, acid; no albumin, sugar, bile pigment or blood; indican, moderate amount; urea, 3½ per cent.; microscopically —few hyaline casts, large number calcium oxalate crystals, many vaginal and bladder epithelial cells. Repeated examinations did not differ materially from the above.

From 8 to 16 ounces was the usual quantity passed daily. On Feb. 21, 1910, an examination of the blood showed the following: hemoglobin, 70 per cent.; red blood-cells, 4,220,000; leukocytes, 4,480. The differential count was polynuclears, 76 per cent.; lymphocytes, 23 per cent.; cosinophils, 1 per cent.

The fluid removed from the abdomen was always the same in character.

Thus it presented itself to us: light milky opalescent in color; after twenty-four hours a thin layer of fat forms on the top; specific gravity, 1.006; reaction, strongly alkaline; taste, salty; albumin, 0.6 per cent.; sugar, trace; microscopically, centrifuged sediment contains red blood-cells, small lymphocytes and swollen endothelial cells

No mitotic cell changes were discovered at any time, as is usual with fluid from carcinomatous degeneration of the peritoneum. As a culture medium it was fairly good. The fluid has remained sterile for months when kept on ice; we have used some four months old with no untoward effects—local or general.

It was our opinion that our patient had had carcinoma of the liver, but was gradually throwing the disease off and that the liver changes were due to a cicatrization producing an obstruction to the portal circulation and consequently ascites. If this patient was producing antibodies in her system, we had a chance to carry them to other patients and thus possibly produce a cure.

We knew that Dr. Hodenpyl was injecting a fluid into patients, but was keeping the matter a secret for obvious and wise reasons. It was not until the end of February, 1910, that we learned from Dr. Hodenpyl, at

a personal interview, that the fluid which he used was almost identical with the fluid we were using and that the previous histories of both patients were practically the same. The large amounts of fluid he had injected proved an encouragement to us to increase our doses, which up to that time had but in one case reached 500 c.c. This patient received this dose five times. This was, we believe, the maximum dose reached by Dr. Hodenpyl.

The fluid was drawn under the most painstaking aseptic precautions into large bottles which had been sterilized fractionally for three successive days. The fluid was then immediately placed in the refrigerator and when prepared for use was transferred to small flasks holding 250 c.c. These flasks were thoroughly sterilized before filling. It was thus that we never in our own hands had any reaction in 560 injections given, except in a couple of cases in which we allowed an intern to use the fluid. We never used any preservative since we considered our method of aseptic handling perfectly safe. All injections were given hypodermically except in Case 19, in which four injections were given per rectum, rather as an experiment than otherwise and because the patient complained of pain caused by the needle.

Fig. 1.—Mrs. H. G. (Case 2). Deep cavity remaining after sloughing of cancerous growth.

All injections were given by siphoning the fluid directly from the container through a sterile rubber tube, to the lower end of which the needle was attached. The container was usually held about 20 inches above the patient. The siphoning was started by the water which remained in the rubber tube as it was taken from the sterilizer. The greatest care was exercised throughout the whole process of injection to prevent any contamination. When the fluid was used as prepared by us in small flasks, we never saw any adverse symptoms as seen in other hands.

We sometimes wondered whether cancerous fluid, for such we must now consider it after the post-mortem showing of our donor, would not produce cancerous disease in the patients into whom the fluid was injected. In no instance was a tumor of any kind, except an abscess or two already spoken of, the result. What might have occurred in patients not suffering from cancer we are unable to say, for we were exceedingly careful not to use the fluid in any case of doubtful diagnosis.

The experiences observed by this treatment were very remarkable and unique in many instances—so much so that we think the experience should not be lost and may be of use to others studying similar conditions.

We have not cured a patient and in that regard were ill paid for our very great labor. The improvement in the subjective feelings of the patients was so great that we think our efforts were not entirely lost. For instance, the pain in nearly all cases rapidly decreased. In the cases that were subject to hemorrhages, it was noted that the bleeding lessened markedly or stopped entirely. The patients usually gained flesh for a while.

In Case 2, the glycosuria disappeared entirely, though she was under a general diet. When she refused further injections, her urine promptly showed sugar again. In Case 5, there was no disappearance of sugar in the urine. When a carcinoma sloughed, as it often did very rapidly under the influence of the serum, there appeared a bright red tissue, which in macroscopic appearance simulated that of healthy granulations. Under the microscope, however, this tissue proved to be carcinomatous with large cells crowding each other closely and of remarkable arrangement. Figure 1 shows a case in question and Figure 2 the microscopic appearance of the growth which is typical of all cases we examined. Often an increased mobility was noted in the tumor. Thus in Case 3, the mobility was quite marked, so much so that we began to think of a possible extirpation. The

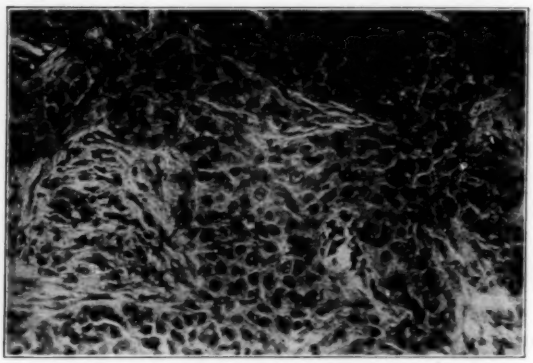

Fig. 2.—Microscopic appearance of tissue lining cavity shown in Figure 1.

diarrhea of Case 3 also became less so that he had but two to four movements a day. Some of our patients had had albuminuria, but in no case did we see albuminuria as a result of the injections. None of our patients knew the character of the disease they were suffering from except one, the first case on the list. It is thus the psychic element was eliminated.

The serum was used only in cases of inoperable carcinoma. We did, however, use it in three cases of recurrent sarcoma to a certain extent for experimental purposes and comparison. In two sarcomatous cases the relief from pain was marked. In the third case of sarcoma treated by Dr. Charles L. Ill, there was no relief, possibly because at this time we feared to give large doses. We were surprised at the relief it gave to a patient with recurrent sarcoma of the vagina and scapula, which made us strongly suspect that the original cause of both sarcoma and carcinoma were the same.

When we first started the work we did so with great trepidation. Our first dose of the serum was given on Jan. 12, 1910.

CASE 1.—*Carcinoma of the Cervix.*—M. W., a widow, aged 52, mother of five children, was referred to us by Dr. C. Twitchell.

She had been sick for three years with carcinoma of the cervix, which had involved the whole roof of the vagina and pelvis. She weighed but 78 pounds. Her hemoglobin percentage was 20. A drawn specimen of urine contained a trace of albumin. This poor creature had been in bed for a long time and we expected her death almost daily. A timid dose of 5 c.c. was first injected which produced no reaction. In three days we injected a larger dose of 10 c.c. The doses were gradually increased, so that within three weeks the average dose was 500 c.c. The total number of injections given was thirty-five.

This case was one of the most promising A steady improvement had taken place throughout the treatment. Whereas the patient was bedridden and practically moribund before the injections were given, in two months she was sitting up every day with comfort, her appetite was good, and she gained three pounds in weight and 10 per cent. hemoglobin. She was entirely free from pain, slept well and felt well otherwise. She died suddenly on March 30, 1910, from a severe hemorrhage.

Autopsy showed the uterus small and deeply excavated. The excavation was lined with what appeared on gross inspection to be granulation tissue. Microscopically, however, it proved to be carcinomatous. No cervix was present. The mass which filled the pelvis when the patient first came to us had entirely disappeared.

CASE 2.—*Epithelioma of Vulva and Inguinal Glands.*—The patient, Mrs. H. G., was 52 years old. Her urine contained a moderate amount of albumin and 2.5 per cent sugar, also many hyaline and granular casts. On Feb. 5, 1910, she received her first injection. By Feb. 14, seven injections had been given, two of which were given close to the inguinal glands. The glands had now begun to break down. On February 16 and 19, 500 c.c. each were given. The most prominent part of the glands had now broken down, from which there oozed a pale yellowish fluid. Microscopically, no formed elements were present in this discharge. The specific gravity of the urine at this time was 1.012; it contained no sugar notwithstanding a general diet. By March 23, she had twelve more injections ranging from 250 to 500 c.c. The sloughing of the growth had now left a deep cavity lined with what appeared grossly to be granulation tissue, but microscopically it proved to be carcinomatous. The patient's attendance now became very irregular and sugar again appeared in the urine.

She died in August, 1910, five months after the injections were discontinued.

CASE 3.—*Carcinoma of the Sigmoid.*—Mr. B. B., aged 55 (referred by Dr. H. P. Roden), for four months had had severe pain in the lower abdomen, considerable loss of flesh and much diarrhea. He presented himself on Feb. 10, 1910, with a large mass in the left iliac fossa, which could be felt through the rectum. He had from eight to ten very foul fecal and bloody discharges daily. By March 10, he had received ten injections beginning with 60 c.c. and ending with 400 c.c.. The improvement was very marked. By April 16, he had received twelve more injections of 250 c.c. each. The mass was now very much more movable. By May 16 he had received eight more injections of about the same dose and still said he felt well, but it was evident that he had lost some flesh. Seven more injections of 125 c.c. each were given by June 14.

The patient's attendance became exceedingly irregular and his general health now rapidly deteriorated. He died on July 21, from an almost continuous diarrhea. The movements were often streaked with blood.

This was one of our very hopeful cases in the beginning. The patient's improvement during the early treatment was very remarkable.

CASE 4.—*Carcinoma of the Cervix.*—Mrs. S. J., aged 50 (referred by Dr. Rogers), had a large friable mass involving the cervix and broad ligaments. Her chief complaint was frequent hemorrhages. During the treatment which extended from Feb. 14, 1910, to July 21, 1910, she had but three hemorrhages. In all she received fifty-five injections in doses varying from 60 c.c. to 500 c.c. The treatments were discontinued because our serum gave out. The patient had improved very much and gained 4 pounds. At the time of discharge the growth was much smaller and showed a deep central excavation. An examination on Oct. 17, 1911 (fifteen months after the last injection), showed an ulcerating mass nearly filling the vagina and extending out to the vulva.

CASE 5.—*Carcinoma of the Urethra.*—Mrs. Z. K., aged 53, for three years had had frequent and painful micturition and constant hematuria. She had lost 30 pounds in weight. Her urine contained 3 per cent. sugar. The entire length of the urethra was involved by an epitheliomatous growth which would not admit the smallest catheter. Nine injections of about 250 c.c. were given between Feb. 14, 1910, and March 15, 1910. The relief was so great that the patient left the hospital against our advice, insisting that she was well. When the patient was discharged the urine contained about 1 per cent. sugar but no blood. She states in her letter of Oct. 11, 1911 (nineteen months later). "I can say that I am feeling very well. Your treatment helped me very much."

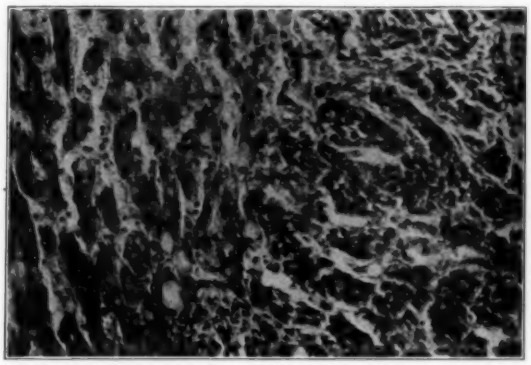

Fig. 3.—Microscopic appearance of liver from donor, showing cancerous involvement.

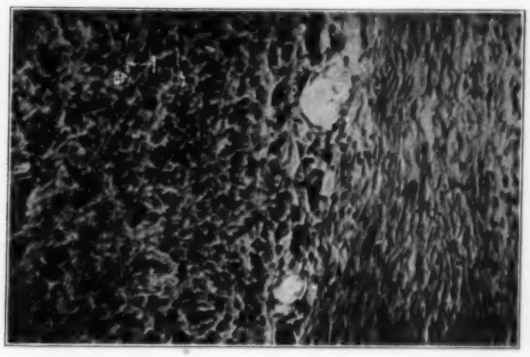

Fig. 4.—Microscopic appearance of ovarian tumor from donor, showing cancer tissue and a relatively large amount of fibrous tissue.

CASE 6.—*Epithelioma of Lower Jaw.*—Mrs. M. C., aged 64 (referred by Dr. Carl Sutphen), came to us on Feb. 16, 1910, with a large mass involving the entire left side of the lower jaw. She had considerable difficulty in taking food and suffered severely from pain. In all this patient received thirty-eight injections from Feb. 16, 1910, to July 6, 1910, in doses of from 100 c.c. to 500 c.c.

Until early in June she was quite free from pain but since the serum gave out the pain recurred and the tumor took on a rapid growth. From indirect sources we have learned that this woman died in December, 1910.

CASE 7.—*Carcinoma of the Cervix.*—Mrs. J. S., aged 44 (referred by Dr. F. R. Bailey), was seen on Jan. 11, 1910, with a cauliflower growth of the cervix. The uterus was fixed and the broad ligaments invaded on both sides. In all forty injections were given, the last on July 7, 1910, when it was noted that the tumor was somewhat smaller. During the treat-

ment the patient suffered no pain whatever. Dr. Bailey reports that she died on July 27, 1911 (one year later). He remarks that he had never seen a case progress so slowly and require so little in the way of opiates.

Case 8.—*Carcinoma of the Cervix.*—Mrs. R. H., aged 58 (referred by Dr. Charles L. Ill), for three months had had backache and recurring hemorrhages. The growth extended deeply into the left broad ligament and culdesac of Douglas. From March 4 to March 29, 1910, she received seven injections. She refused further injections because of the soreness produced from the treatments which interfered with her work. We learned that she died one year later.

Case 9.—*Carcinoma of Stomach.*—Mr. T. M., aged 48 (referred by Dr. Eugene Hodenpyle), for five months had had frequent attacks of vomiting and rapid loss of weight. Examination showed carcinoma of the stomach with metastases in the right lung and in an old appendectomy scar. The patient was very weak and emaciated and had moderate ascites. From March 7 to March 21, 1910, he was given eight injections in doses of from 120 c.c. to 400 c.c. He failed rapidly and died on March 24, 1910. This patient was practically moribund when admitted to the hospital, and was treated only out of respect to the physician who sent him to us.

Case 10.—*Recurring Carcinoma of Breast.*—Mrs. F. D. W., aged 36 (referred by Dr. Livengood), had, at the time of our examination, three tumors, each about the size of a pigeon's egg, in the right supraclavicular region, a tumor in the right breast and evidence of cancer in the old scar. Her father had been operated on the year previous for cancer of the breast.

The patient received her first injection on March 8, 1910, of 120 c.c. On April 6, it was noted that the supraclavicular tumors were more freely movable and smaller. During this time she received fifteen injections, three of which were given between the clavicle and the breast. On April 22, however, it was apparent that the tumors were growing larger. In all she received 25 injections of our own serum in doses ranging from 125 c.c. to 250 c.c. On May 6, we made an exchange of our serum with that from Dr. Hodenpyl's laboratory. From this date to May 29, the patient was given eleven injections of the Hodenpyl serum in doses of 125 c.c. to 250 c.c. We noted that on May 11, the tumors were still enlarging. On May 13, she began to complain of pain in the right arm. She died several months later after the supraclavicular glands had broken down.

Case 11.—*Carcinoma of the Cervix.*—Mrs. M. C., aged 52 (referred by Dr. H. B. Kessler), two months previously had been curetted for inoperable carcinoma of the cervix extending well out into the broad ligaments. She was subject to severe and prolonged hemorrhages which recurred one month after the curetting. At the time of our first visit her hemoglobin was but 15 per cent. The first injection was given on March 13 and the last on March 24. She received six injections in doses of from 120 c.c. to 250 c.c. While there were no more hemorrhages after the first injection, the patient died about April 1, probably from her extreme anemia.

This case showed a very marked effect the serum had on the hemorrhages for during the month prior to the first injection she flowed more or less continuously.

Case 12.—*Carcinoma of the Cervix.*—Mrs. M. B., aged 44 (referred by Dr. Charles L. Ill.), on examination, proved to have a large cauliflower mass, very friable and extending well out into the broad ligaments. She received her first injection on March 17, 1910, and in three days reported that her pain was relieved. On March 31, she had but very slight pain. On April 6, she reported the first flow which continued for two weeks. Injections were discontinued until May 14, when it was noted the growth had severely sloughed. A deep ulcer in the center of the growth was apparent on May 21. On June 30, she received the last injection. The total number of injections was twenty-four, given in doses of from 120 c.c. to 250 c.c. The last examination showed a complete disappearance of the cauliflower mass and a deep excavation lined by bright red carcinomatous tissue.

She felt so well that she left the hospital on June 30. She died on December 4, 1910.

Case 13.—*Carcinoma of the Cervix.*—Mrs B., aged 42, for four months had had constant pains in the lower part of the back and pelvis, also small but often repeated hemorrhages. Examination showed a carcinoma involving the whole cervical canal and extending somewhat into the vagina. The first injection was given March 22, 1910. At the time of the third injection, March 26, the pain was much relieved. On April 7, she reported herself quite well with a better appetite and entire freedom from pain. In all she received twenty-six injections, our serum now having given out. There were no hemorrhages during the treatment and it was quite evident the growth was held in check. She died about nine months later.

Case 14.—*Carcinoma of the Cervix, Urethra and Bladder.*—Mrs. M. F., aged 70, for five months had had pain in the back, painful and frequent micturition and frequent hemorrhages. This patient received but four injections, the first on March 23, 1910. Three days later she reported herself much relieved and having less difficulty in urination. The treatments were stopped because the patient felt that she could not come a long distance to the hospital for them.

Case 15.—*Carcinoma of the Cervix.*—Mrs. A. P., aged 48 (referred by Dr. Silk, Perth Amboy), for eighteen months had had small but frequent hemorrhages, pain in the lower abdomen and much loss of flesh. Examination showed a large mass involving the cervix and extending well out into the broad ligaments. She received her first injection on May 14, 1910. Three days later she stated that the pain was much relieved. She continued to come for treatment until Aug. 13, 1910, receiving a total of twenty-six injections in doses of from 120 c.c. to 250 c.c. On August 13, it was noted that the mass had apparently not changed.

There have been no hemorrhages since she came to us and relatively little pain as compared with that prior to treatments.

On Sept. 28, 1911, Dr. Silk reported that the patient was still living, that she had secondary deposits in her liver and much vomiting.

Case 16.—*Carcinoma of the Liver.*—Mrs. M. M., aged 43, for three months had had pain in the abdomen and gradually increasing ascites, also much loss in weight. Palpable masses were easily located in the liver region. Between April 21 and April 29, 1910, four injections were given. After the last injection it was noted that she was very cheerful and thought she had not felt so well in months. Her family insisted on taking her home and she was allowed to go, treatments being discontinued.

Case 17.—*Carcinoma of the Cervix.*—Mrs F. K., aged 50, had been flowing almost continuously for one year. During the past month she had had severe constant pain in the back. Examination showed a large cancerous mass involving the cervix and broad ligaments. The first injection was given on June 1, 1910. One week later she reported herself as very well. On July 15, we noted that the mass had broken down and showed a deep central excavation. The patient received in all twenty-one injections of 125 c.c. each, the last on July 20 when our serum gave out. This patient was doing very well and was entirely free from pain. We were unable to learn of her subsequent history.

Case 18.—*Recurring Carcinoma of Vagina and Pelvis.*—Mrs. E. A., aged 40, presented herself about the middle of January, 1910, with pain in the lower abdomen and back. The uterus was extirpated under the diagnosis of a cervical carcinoma, microscopic examination at that time showing a squamous-celled carcinoma. The patient returned on May 1, 1910, because of severe backache and pain in the pelvis. Examination now showed a large recurrence in the scar and in the pelvic cellular tissues. She received her first injection on May 3, the dose being 120 c.c. On May 7, she reported less pain and that she slept much better. On June 9, her general condition was much better and she had had but slight backache. The same was noted on June 18. On July 7 the mass was apparently growing and she complained of backache again. On August 9, her pains were increasing, no serum being given for two weeks. The last injection was given on August 16, our serum now having given out.

Throughout the treatment the patient's weight remained about the same. The pain was much relieved. During the latter part of the treatment, however, it was evident that the mass was enlarging. The patient died in December, 1910.

CASE 19.—*Carcinoma of the Stomach.*—Mr. L. B., aged 48 (referred by Dr. A. B. Nash), on June 4, 1907, had a posterior gastro-enterostomy and on Jan. 7, 1909, an anterior gastro-enterostomy performed by us, to relieve obstruction, in both instances. He made good recoveries after both operations and was comparatively well for a length of time. He entered the hospital again on May 5, 1910, suffering from persistent vomiting and extreme weakness. Between May 5 and May 10, he received three injections in doses of from 60 c.c. to 240 c.c. His stomach could now retain some liquid food. On May 12 and 14 he received two doses of serum from a patient suffering from cardiac ascites. From May 21 to June 13 he continued to receive the original cancer serum in doses of from 125 c.c. to 250 c.c., during which time he was able to take and retain more liquid food than formerly. He died on June 15.

An autopsy showed a very large irregular carcinomatous mass involving the pylorus and greater curvature of the stomach. The pylorus was entirely closed. A probe could be passed through the openings remaining from the anterior and posterior gastro-enterostomies. He had as little reaction from the cancer serum as he did from the cardiac serum.

CASE 20.—*Carcinoma of the Stomach.*—Mrs. M. E. M., aged 56, had pain in the epigastric region for ten years with frequent attacks of nausea and vomiting. In May, 1910, an exploratory operation by Dr. Brown showed a carcinoma involving the anterior wall of the stomach. She was admitted to the hospital where an examination showed a large mass in the epigastrium, fixed and painful. She vomited at least once every day. She left the hospital on July 23, having received twenty injections of 125 c.c. each. This patient improved very considerably under the treatment. She no longer had pain, nausea or vomiting. If anything at all, the tumor seemed smaller.

Her husband wrote us under date Aug. 4, 1910: "I take pleasure in advising you that Mrs. M. suffers no pain, eats fairly well, enjoys her food, digests it, has no vomiting spells and is quite a little stronger. She attends to her household duties, is up and about all day and every day."

CASE 21.—*Carcinoma of Vulva and Inguinal Glands.*—Mrs. E. R., aged 65, for six months had a growing tumor of the right labium accompanied by severe pain. The first injection was given on April 13, 1910. At the time of the fourth injection, great relief from pain was noted. On April 26, at the time of the sixth injection, sloughing of the entire right labium was noticed. On May 12 and May 14 she received two injections of 60 c.c. and 240 c.c. of cardiac ascitic fluid with no local or general reaction. On April 26 the patient complained of some pain again. On May 30 it was evident that she was growing weaker and on June 27 she died.

The entire right labium had completely sloughed. In this case no injections were given within 6 inches of the growth, thus no mechanical action of the fluid could have caused the sloughing. In all she received twenty-six injections of from 30 c.c. to 250 c.c.

CASE 22.—*Sarcoma of Vagina.*—Mrs. A., aged 53, was operated on by us eight years ago for sarcoma of the uterus. For the past three years she had had a profuse vaginal discharge with painful and frequent micturition, the urine being often tinged with blood, also severe pain in the lower abdomen. An examination showed a large globular mass about 18 cm. in diameter, easily made out and having its origin in the pelvis. A specimen removed from the vagina proved it to be a small round-celled sarcoma. The first injection was given on May 20, 1910. One week later the patient reported an entire absence of pain. On June 13 she informed us that she felt quite well and had a much better appetite. The freedom from pain continued until the time our serum gave out (July 16).

This case was remarkable for the entire relief from pain. The urinary symptoms were markedly benefited and the patient increased in both weight and strength. For a time the vaginal discharge ceased entirely. Notwithstanding all this the tumor continued to grow.

In all she received twenty-one injections in doses of from 125 c.c. to 259 c.c.

We could not learn of her further history.

CASE 23.—*Recurrent Carcinoma of Breast, Lung and Spine.*—Mrs. P., aged 31 (referred by Dr. Sarah Mead), was operated on elsewhere three months before coming to us. In a communication from her doctor the diagnosis was given as adeno-carcinoma of the right breast.

For a few weeks the patient had complained of agonizing pain in the spine at the level of the eighth dorsal vertebra. She was unable to sit up in bed and suffered severely from pain when she attempted to turn on either side. When assisted to a sitting posture, she was unable to remain there owing to the same pain. She had perfect control over the bladder and rectum, but only partial control of the lower limbs.

An examination showed carcinomatous involvement of the old breast scar and left breast, dulness over the apex of the right lung and exquisite sensitiveness over the eighth dorsal vertebra.

The first injection was given on June 21, 1910. On June 29 she sat up of her own accord and with apparent comfort. On July 6 she had no pain, felt fairly well, but was weak. On August 10 it was noted that the increase in growth of the tumor in left breast and scar of right breast was tremendous. The patient died on August 23. The remarkable freedom from pain for the first three weeks was astonishing. In all she received fifteen doses of about 150 c.c. each.

CASE 24.—*Carcinoma of Uterus.*—Mrs. F., aged 48 (referred by Dr. J. Haydon), for six months had had pain in the lower abdomen and pelvis. Examination showed a large, hard irregular friable mass involving the cervix and both broad ligaments. The first injection was given on June 23, 1910. On June 30, she felt much better, but still had some backache which persisted throughout the treatment. The last injection was given on July 22 when the serum gave out. There was no apparent change in the tumor during the month's treatment. The patient received in all fourteen injections of 150 c.c. each.

This was the only case in which there was no marked relief from pain. She died during the summer of 1911.

CASE 25.—*Carcinoma of Stomach and Liver.*—Mrs. H., aged 60 (referred by Dr. Roden), for ten months had had pain in the liver region. She was deeply jaundiced and had a large nodular mass in the right hypochondrium. On June 24, 1910, she was given the first injection and on July 5, the last—four in all. No change in the tumors was recorded. An exploratory incision by Dr. Charles Ill on August 4 showed extensive cancerous involvement of the stomach and liver. This was done more to end a dispute as to the diagnosis than with any hope of a curative effect.

CASE 26.—*Recurring Sarcoma of Spine.*—Mr. E. R. C., aged 20, was operated on by Dr. Charles Ill, Nov. 30, 1909, for sarcoma of the coccyx. There was almost immediate return both locally and generally, accompanied by severe pain. The patient was given large doses of the serum without the slightest relief from pain, nor did a dram of morphin given during the day have much effect on him. He died in a short time.

CASE 27.—*Recurring Sarcoma of Scapula and Lung.*—Y. M., female, aged 12 (referred by Dr. M. Seidman), was operated on Dec. 12, 1909. We did a total extirpation of the uterus, ovaries and tubes for sarcoma of the uterus, which proved to be of the small spindle-celled variety. On June 12, 1910, she came to us with a recurrence in the right infraspinatus muscle which gave her severe pain on motion of the arm. The tumor was the size of a hen's egg. There was also an involvement of the upper lobe of the left lung. The first injection was given on June 12, 1910, which gave immediate relief from pain. On June 20 the patient's mother reported great improvement. The pain in the arm had entirely disappeared; the patient slept better and felt better otherwise. On June 29, and subsequently, a rapid growth of the tumor is noted. On July 6 the pain recurred and anodynes had to be given. She died on August 2, 1910.

We feel that the psychic effect can be excluded in this case, the patient being a mere child and certainly not aware of the nature of her illness.

In all, twenty-seven patients were treated by us, some to the fatal end of their illness or else to the time the serum gave out. Besides this number of cases treated,

others were treated by the late Dr. Samuel Alexander of New York, Dr. James Ewing of Cornell, Dr. F. R. Bailey of Columbia University, Dr. William T. Cladek of Rahway, N. J., Dr. Bancroft of Orange and Dr. Charles L. Ill, of Newark. Some of the fluid was also used by Dr. Eugene Hodenpyl's assistants at Roosevelt Hospital, New York

We wish to thank Dr. Ewing for the very great interest he took in the fluid and for its experimental use.

Dr. Samuel Alexander kindly consented to use the serum on six of his patients for inoperable cancer of the bladder and prostate. All of his patients knew the character of their disease. In none of these cases was the growth arrested. In two of the bladder cases there was marked local reaction, pain and hemorrhage with a discharge of cancerous material in the urine. They all claimed to have received benefit immediately following the injections; that is, they had less pain and less frequency in urinating. Dr. Alexander says in his letter of Oct. 30, 1910, "I am convinced that except for the moral effect of the treatment, I have seen no improvement." In an earlier letter, however, dated June 11, 1910, he says, "I cannot report any cures, but I can certainly interest you in telling of the improvement which has occurred in these cases of cancer of the bladder."

The patient from whom we obtained the fluid died suddenly on July 12, 1910.

An autopsy five hours after death showed that the peritoneal cavity contained 12 liters of the milky fluid already described. The peritoneum was everywhere much thickened. The intestines were studded with small yellowish-white bodies raised from the surface and ranging in size from a pin-head to split pea. Many translucent vesicles filled with a viscid straw-colored fluid were scattered over the inferior surfaces of the liver, spleen, transverse colon and mesentery. The intestines were adherent in many places to adjacent organs and to the parietal peritoneum. The pelvis was occupied by two nodular ovarian tumors connected by a third intervening tumor. The liver was but two-thirds the normal size; its surface was smooth and borders rounded. The gall-bladder was contracted. On section, the liver presented a nutmeg appearance, with many white areas of fibrous tissue projecting inward from the surface in a branch-like manner. The spleen was moderately enlarged and dark red in color. The kidneys were very pale in color but otherwise looked normal. Sections from the liver, ovarian tumors and intestinal nodules were all carcinomatous. Fibrous tissue was very much in evidence surrounding the cancer cells. In addition the liver showed extensive fatty degeneration. By request the thorax was not opened.

The accompanying microphotographs were made by Dr. H. S. Martland.

1002 Broad Street—448 High Street.

THE STATE INSTITUTIONS AND SOME OF THEIR PROBLEMS WHICH MEDICAL MEN MAY HELP TO SOLVE *

A. L. BOWEN
Executive Secretary, State Charities Commission
SPRINGFIELD, ILL.

From a position of obscurity in the field of public charity, Illinois has within recent years bounded into one of prominence in the nation and the world. As a result of improvements in the service and physical plant of our institutions amounting almost to a revolution, during which the entire system of administration has been transformed to comply with more modern thought and demands, Illinois to-day is considered one of the leaders in the new movement.

A formal catalogue of all that has been done or is in process to make the physical property efficient and the medical and nursing service comply with modern ideals is an array too long for publication here. It represents that which can be done with money and brains, properly combined and mixed with good business judgment and honesty of purpose and intent. All these things were necessary preliminaries to the greater and more difficult problems which progress encounters. We had to have these things and we had to do these things to furnish us the facilities and the means with which to solve these problems.

There are now two questions of great moment: first, the practical one of financial burden which the growing class of mental defectives and moral delinquents is piling up on the taxpayer; and second, that of our moral responsibility toward this burden, involving the query, What are we going to do about it? It is with the second question that this paper will deal primarily.

MEDICAL MEN AND PUBLIC OPINION

We have had the support and sympathy of men of medicine all through this period of rehabilitation and improvement. What the state has been doing has appealed to you as right, just, humane and necessary. Some have complained that progress has not been fast enough. Some eminent physicians to-day are criticizing the state for defects in the system which are admitted to exist. And they must exist for a long time to come; for it is easier to point out defects than it is to repair them—easier to advocate reforms than it is to put them into effect. The charity authorities of the state cannot move faster than public sentiment will warrant.

After all, improvements in the service and progress in lessening this burden depend on an enlightenment of public opinion. The people must understand these questions better; they must know what is responsible for mental breakdown; they must know what they must do to prevent that portion which we know can be prevented; they must know what is the correct attitude toward the acutely insane patient both before he enters the state hospital and after he leaves it, marked either "recovered" or "improved." It is necessary that the people learn to accept the correct idea of insanity and view from a different point the state institutions and the public agencies at work within them.

The county medical society is a center of information on questions of public health. It is daily disseminating knowledge on this subject. The relation of private and public health to mental defectiveness or mental breakdown is fairly well understood by the profession but not by men and women in the average walks of life. There is no one who can tell these people so well as the county medical society what are the rules of good health, physical and mental hygiene and sanitary environment, how necessary it is to observe them, and what their violation or neglect entails. The relation between so many of the bodily ills and mental and nervous diseases is so pronounced that physicians and laymen alike cannot know too much about it.

IMPORTANCE OF CHILD WELFARE

The child is the seed from which grows up the sound, self-supporting citizen or the mental defective, the insane, the delinquent. We have been paying all attention to the treatment and care of the finished product

* Abstract of a paper read before the Williamson County, Ill., Medical Society, April 23, 1912. A copy of the complete paper may be had on application to the State Charities Commission.

of unwholesome living and none to the potential elements which are forming in the child at our feet.

The demand to-day is for child welfare. The hope of the student in mental and nervous diseases with all their involvements of moral delinquency, racial degeneracy, public burden and the like is the child. The salvation of the child depends on home environment and school training, in both of which the physician in the community has a right to exert the great power of his influence and knowledge.

Unclean physical environment is the soil of unclean moral health. Unclean physical and moral environment of the child means an enfeebled adult mind and body. It germinates the unclean mind and the unclean act follows, from which to the moral obliquity which produces the degenerate, the delinquent and the criminal or what is equally as bad, the feeble-minded youth or the insane adult, there is only one short step. In either case the child has become a menace to society or a charge on the state.

DUTY OF THE PHYSICIAN

There is no man in the community so well equipped as the physician to carry to the fireside the truths of physical and moral health, or tell the parent his duty and responsibility to the young child. He can instruct in the simple principles of hygiene and sanitation. He can impart to the parent the truths of heredity and its influence on the mind and future conduct of the child. He knows and can tell some of the sure and certain ingredients of an unstable and broken-down mind. He knows the effect of the excessive use of alcohol. He knows what venereal disease will do for the nervous and mental system. He knows what the toxins of internal secretion, stimulated by improper living and violation of health laws, will do. He knows, too, what injury stress, so often preventable, leaves on the mind.

The medical society in each county should never yield one inch in the fight on the advertising quack and advertised cure-all. These two sinister agents are shaping the material for the asylums and colonies. Their lying advertisements in glaring type in newspaper and on bill-board are carrying to the public false information about health and living. They are doing more to counteract the efforts of the state and science than any other dozen influences combined. Their attitude toward life and the public is vicious. They have masked themselves behind an honorable profession for the purpose of plundering and robbing the innocent and unsuspecting. With fiendish cunning they employ the arts of psychology to ensnare their victims. It is a remarkable fact that the majority of the public will believe and act on the statement of the quack or the nostrum-maker and turn a deaf ear to the advice of the honorable practitioner.

These men are contributing to the nervous and mental wrecks of our country at a frightful rate. They are laying the foundation of public health degeneration, carrying with it all that goes with enfeeblement of body and mind. They deserve the scourging of society. No more important work confronts the practicing physician than that of exterminating by force of public opinion and the act of wholesome legislation the quack and the nostrum.

TREATMENT OF THE INSANE

The public must learn that insanity is no more a disgrace than is typhoid fever or diphtheria, and not so much so as those diseases which spring from insanitary surroundings. They must know that it is a disease or a symptom of disease or diseases. It must be treated as diseases are treated, skilfully, scientifically and sympathetically. The patient must not be feared. He should not be tied up because he acts queerly. He should not be hurled into a dirty, filthy jail among a crowd of drunken sots or petty offenders.

More damage is done to the acutely insane patient during the first few days of the manifestations of his trouble than can possibly be estimated. Patients come to the state hospitals in a frightful condition, run down in physical health, probably through the fault of an advertising quack or the evils of a nostrum. They have broken bones and scarred limbs. They are tied hand and foot and strapped to the conveyance.

I cannot describe to you adequately in this short time the cruelties and inhumanities which are practiced on the insane during the interim between the first onset and their admission. Many families foolishly attempt to keep their friends at home. The disorder or disease is all this time rapidly growing worse. The time for treatment is in the early days of the disease. The sooner the mentally afflicted reach the receiving ward of the state hospital, the greater their chances of recovery. It seems to me that the physician's duty in this matter is to recommend early transfer to the state hospital. I believe you realize this, but you hesitate sometimes because of the prejudice and stigma attached to hospitals for the insane.

PSYCHOPATHIC WARDS AND PSYCHOPATHIC HOSPITALS

Along this line of early treatment various ideas have been advanced. One is that psychopathic wards should be attached to general hospitals. In some places this experiment is being tried. The results are not definite enough to warrant a judgment.

Claims of cures which sound extravagant are made by some. The statistics may be correct so far as they go, but they do not indicate what class of patients have been under treatment. Such wards usually take only hopeful cases. They are located in the great cities and receive a great many alcoholics. The victims of dissipation, either in strong drink or the frivolities of high-strung social life, are not averse to entering such wards. All these classes are hopeful and the recoveries, of course, form a large percentage of the admissions.

There are arguments both for and against the psychopathic ward of the general hospital, but I shall not undertake at this time to discuss them.

Another plan is for the state to establish psychopathic hospitals in various parts of the state for the reception of nervous and mental cases in their incipiency, such admissions to be purely voluntary and without court proceedings.

If the public abhorrence of the state hospitals could be removed, the number of voluntary admissions into them would greatly increase and it would be possible to establish in them such strictly psychopathic wards.

Under the improvement which has taken place in recent years in public sentiment and in the greater confidence the people are learning to have in our state hospitals, the number of voluntary admissions has been steadily increasing; they average one a week at Kankakee, and the psychopathic ward problem will probably solve itself.

It is evident that the public attitude toward these hospitals and toward the insane man and his affliction can be radically changed; for in the last twenty-five years it has been radically changed for the better. We must keep hammering away at the unjust barriers.

Until the public has shifted its view of the state hospital and has come to regard it as a real hospital for the treatment and possible cure of an affliction that is not a disgrace and should not carry any stigma after recovery, the disposition will be strong to avoid the hospital until the last minute, when perhaps the chance of hope has departed. It becomes necessary that the medical society give its aid and assistance in thus changing the attitude of the public toward these institutions.

Treatment of the patient after he reaches the institution depends, of course, on the diagnosis. The diagnosis depends in large part on the history of the patient. This history the members of the family are frequently unable to give. They do not understand the necessity of many of the questions. Some of the queries are offensive, such as, for instance, whether or not the patient has ever had a venereal disease, and whether or not there is any trace of syphilis in his ancestry. On the intelligence and fulness of the history which family and physician can give depends the character of the early treatment.

If the patient recovers or improves and is able to return home, there should be in the community welcoming hands to support him. He is still a sick man in need of encouragement, sympathy, help and nursing. In his case the community as a whole must be nurse and support.

In some states, throughout the cities and towns, societies have been formed whose duty it is to look after the paroled, improved or restored insane patient. They are doing good work and accomplishing results. These societies aid the hospital in collecting a patient's history. They assist in changing a hostile into a sympathetic public. They are bringing about a revolution in the public attitude toward these institutions and the insane. They are likewise spreading the known facts about insanity, its causes and its prevention, and the manner of treating the patient in the early days of his affliction.

PSYCHIATRY IN MEDICAL COLLEGES

Physicians can give to this campaign a force and directness that no other single class in society can furnish. But while we speak of the duty of society and the problems of educating the public to new views, we must not forget the training and education of the physician himself. Every medical school should have a course in psychiatry, and no medical education should be considered complete that lacks training in this branch. It should not consist of perfunctory lectures and abbreviated instruction, made to satisfy the form rather than the spirit of the demand of the day.

Few colleges have adequate courses in psychiatry. Medical students seem to shun what there is. The courses as designed are inefficient in most cases because they lack the clinical facilities. These faults may now be removed by cooperation and coordination with the state institutions, and by the organization of psychopathic wards in the general hospitals. Psychiatry should be made necessary to graduation. It is unnecessary to dilate on this subject. It must be apparent to every intelligent man that a medical education which does not provide the young practitioner with the latest knowledge in mental and nervous diseases and how to treat them is wofully deficient. Every medical society in the state might well lend its support to this movement. You all are interested in higher standards of medical education. You desire that those who come into the profession shall be as fully equipped to meet the medical problems of the day as it is possible to equip them. Why neglect psychiatry?

I have mentioned in passing the psychopathic ward in the general hospital and have observed that some success has followed efforts along this line in the larger cities. These could afford the medical student the clinic he so much needs in the study of nervous and mental affliction. There is a demand in Illinois that the state create a distinctly psychopathic hospital in Chicago, to be followed later by similar hospitals at several centrally located cities down the state. The sentiment of the medical profession, I believe, will sustain the general assembly in voting the money for such institutions.

Meanwhile our state authorities would welcome a closer union between practitioners and the state institutions. These hospitals are open to your inspection and examination, and it is the desire to make the service within them such as will attract the very brightest of the intern class and the most ambitious of the younger practitioners.

THE BACTERIAL ETIOLOGY OF ACNE VULGARIS *

MARCUS HAASE, M.D.
MEMPHIS, TENN.

A critical review of the literature on the etiologic significance of certain organisms found in acne causes one to wonder if we all mean the same disease when we say "acne vulgaris;" and the numerous opinions on the efficacy of bacterins as a therapeutic agent increase the confusion of a very perplexing question.

That there are three forms of microorganisms constantly present in the comedo is accepted by all investigators of the subject: a small bacillus, a coccus, and that yet mysterious thing known as the bottle bacillus. The last-named, because of its presence in larger numbers and its more fully developed forms in other regions than that occupied by acne, is discarded as having no influence on the disease. The second, the coccus, until recently was classed as one of the staphylococcus group; and while some believed it to be the cause of suppuration, all were agreed that it took no part in the production of the comedo. The first, the bacillus, since it was first discovered by Unna, has been the bone of contention; and the conclusions reported by the various students of the subject as to its morphology, its cultural characteristics, its response to serologic tests and the result in inoculation experiments on animals create a doubt in the mind of the reader as to whether they were all dealing with the same organism.

LABORATORY RESEARCH

Unna[1] in 1893, while making a histologic study of the comedo, discovered a bacillus which he believed to be the causative factor, not only of the comedo but also of the acne pustule. He named it the acne bacillus and described it as being from 0.6 to 0.75 micron long by 0.33 to 0.5 micron broad surrounded by glœa with deeply staining points. He did not cultivate the organism, but Engman working in his laboratory at that time succeeded in obtaining growths, but always in the presence of other organisms. On leaving Hamburg, Engman turned his

* Read in the Section on Dermatology of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. Unna: Histopathology of the Diseases of the Skin, 1894.

preparations over to Hodara who continued the work and published his findings and conclusions in 1894.

Hodara[2] worked entirely with the comedo and not the acne pustule. His description of the location of the different bacteria in the comedo agrees with that of Unna—the bacillus was always found at the bottom or fundus, the others being more superficial—while he noted a coccus which in culture gave a "milk-white growth" and whose characters were not like the staphylococcus. He concluded that it and the bottle bacillus were saprophytes. His description of the bacillus was that the average size was 0.7 micron long by 0.3 micron broad, surrounded by glœa, curved or bent, the larger having transparent centers with deeply staining ends. Because of its position in the comedo he thought it an anaerobe and attempted that method of culture without success. He succeeded, however, in obtaining poorly nourished cultures by placing the comedo in absolute alcohol for from two to four days and then planting it on agar plates. The organism began to develop in forty-eight hours. He believed it to be the cause both of the comedo and of acne pustule.

Two years later, in 1896, Lomry[3] made what seems to have been an exhaustive study on acne and its bacterial flora. He found numerous organisms both in the comedo and in acne pustule, but the most constant inhabitant of these lesions was a coccus which developed as a white colony on agar. This coccus would not liquefy gelatin or kill rabbits in large doses and he began to doubt his first opinion, that it was a staphylococcus. But by increasing the dose to three full cultures the animal died and he regained the organism, and by passing it through numerous animals it increased in virulence until 0.025 c.c. was sufficient to kill. In the same degree that the virulence increased the growth changed color until it became a distinct yellow. He denies Unna's bacillus any part in the production of either the comedo or pustule. From its morphology and cultural characters he considered it a member of the colon group, but it would not grow on potato, produce gas in presence of sugar, or coagulate milk. By subjecting it, however, to the same conditions that he had the coccus, the passing of it through several animals, it conformed to all the usual tests for the colon bacillus. Finding the same organism on apparently healthy skin that he had observed in the comedo he drew the conclusion that the latter was not of bacterial but mechanical origin in a susceptible individual.

This was followed in 1897 by the work of Sabouraud[4] on seborrhea. In his opinion seborrhea is the primary condition and is due to a microbacillus which is identical with Unna's. He describes it as follows: "The young forms are point-like and comparable to a coccus; the full-grown microbe is 1 micron in length by 0.5 micron broad, and has a capsule which is easily stained with gentian-violet." Cultures which he made on a special acid glycerin agar were never free from a white coccus until he adopted the plan of placing them in an autoclave for ten hours at a temperature of 65 C., the thermal death-point for the bacillus being 70 C. According to Sabouraud, the initial stage is the oily seborrhea; this is followed by the cocoon, and the comedo is not only the highest anatomic and microbic expression of seborrhea, but also the degenerated form. He classes the coccus he found in the staphylococcus group, although it preferred an acid medium and the cultures had a butyric acid odor, and he ascribes the suppuration in the pustule to its presence.

In the same year Beck,[5] working in Unna's laboratory on resorcin-peeling paste, from the peeling of which he made bacteriologic and histologic studies, found even from the faces of those who had neither seborrhea nor acne and on whom he had applied the paste seven or eight times, a bacillus which he identified as Unna's acne bacillus and Sabouraud's microbacillus. He concluded that it was always present in the sebaceous follicles of adults and therefore a saprophyte, but might under certain conditions become pathogenic. Unna in a personal letter, dated April, 1912, says that after carefully reviewing Beck's work he abandoned the bacillus as a causative agent in seborrhea or acne and considered it a fat saprophyte.

Gilchrist[6] in 1899 found a special bacillus in smears from ninety-six pustules from fifty-six patients which he named *Bacillus acne;* fifty-four out of ninety-six cultures were sterile on agar, eleven gave a culture of the special bacillus on glycerin agar and thirty-four gave growths of staphylococcus on slant agar. The pure cultures were obtained from pus from nodules transplanted *en masse* on glycerin agar. He describes the bacillus as short and thick in smears, longer, thicker and branched in cultures. No capsule could be demonstrated. Inoculations in mice and guinea-pigs were successful, the animals dying in about a week; pure cultures were obtained from the different organs. In 1903 he confirmed his previous work. Cultures were taken from 145 lesions from thirty-one patients with the following results: Fifty-two gave pure cultures of the bacillus, twenty-eight were sterile, forty-four gave mixed growths and twenty-one *Staphylococcus albus* only. In histologic specimens from nodules he found the bacillus deep in the corium beneath the follicle, and many of the giant cells found contained the same organism. Agglutination tests in the dilution of from 1:10 to 1:100 gave positive reaction.

In 1900 Bollack[7] was unable to obtain culture by Hodara's method. Even after placing the comedo in absolute alcohol for four days and transferring it to mediums it yielded growths of staphylococcus, but he succeeded when Sabouraud's technic was used and identified it as Unna and Sabouraud's. Inoculations were negative and he concluded that the comedo was not of bacterial origin and the pustule was due to ordinary staphylococcus.

In 1902 Schamberg[8] found a bacillus in the sebaceous follicles of 90 per cent. of fifty individuals which was apparently identical with that described by Unna and Sabouraud. He describes the organism as 1.25 to 1.5 microns long by 0.33 to 0.5 micron broad surrounded by a capsule that stains with gentian-violet. He was unable to obtain cultures, and questions it as an etiologic factor in comedo or acne.

Söllner[9] in 1904 tested for their hemolytic and agglutination properties several cultures of cocci from comedones and acne pustules against the blood of rabbits injected with a 14-day-old culture of various pus-producing cocci, and in nearly all of these experiments his results were negative. He concluded that the pus formation in acne could not be due to staphylococcus, and from his researches, while not denying it an etiologic

2. Hodara: Monatsh. f. prakt. Dermat., 1894, p. 573.
3. Lomry: Dermat. Ztschr., 1896, p. 446.
4. Sabouraud: Ann. de l'Inst. Pasteur, 1897, p. 134.
5. Beck: Monatsh. f. Prakt. Dermat., 1897, p. 601.
6. Gilchrist: Tr. Am. Dermat. Soc., 1899; Jour. Cutan. Dis., 1903, p. 107; Jour. Cutan. Dis., 1910, p. 568.
7. Bollack: Inaug. diss. d. med. Facult. Kaiser-Wilhelm's Universit. Strasburg, 1900.
8. Schamberg: Jour. Cutan. and Gen.-Urin. Dis., 1902, p. 99.
9. Söllner: München. med. Wchnschr., 1904, p. 1680.

significance, he was unwilling to ascribe the suppuration to a constantly occurring coccus that gave a white culture. Söllner says that not one but several bacilli can be obtained from the comedo and acne pustule. Using Hodara's method he obtained five strains which formed spores. They were larger than Unna's, motile, produced no gas or indol, coagulated milk and were Gram-negative. Agglutination tests were negative. He questions Lomry's statement that Unna's bacillus belongs to the colon group.

Hallé and Civatte,[10] working in Darier's laboratory in the Broca Hospital in 1907, found a strictly anaerobic bacillus in the sebaceous follicles on the face of all skins examined, as well as in the comedones. They identified it as Unna's bacillus but not Sabouraud's. They succeeded in cultivating it anaerobically in various mediums, but all attempts to obtain primary growths or subcultures aerobically proved unsuccessful. They describe it as a non-motile, Gram-positive organism. The young form is short and stumpy, the older about the length of a tubercle bacillus, but thicker. They found an aerobic bacillus which was not constant and which they recognized as the common, pseudodiphtheritic bacillus. The coccus that was constantly present in their aerobic cultures they class as the polymorphic staphylococcus of Cedercreutz.

Unna[11] in an article on acne in 1908 ascribes to the coccus that "always gives a milk-white culture" and which is found "constantly in the outer horny layer of the comedo," not only the hyperkeratosis found in the comedo, but the suppuration and granuloma formation.

In 1909 Flemming's first work[12] on the etiology and treatment of acne appeared. In his opinion the comedo and pustule are due to a bacillus which he describes as from 1 to 3 or 4 microns long and 0.5 micron broad. It is weakly Gram-positive, the older forms showing one or more evenly stained dots which may be situated at the poles or distributed along the whole length. The arrangement of the organism is irregular, as it appears singly, in pairs or in large irregular groups.

The microscopic characters of the bacillus in pus films and smears from cultures were similar to the diphtheroid bacillus, and in his opinion it probably belongs to this group. Flemming found it in the pus cells. In 44 per cent. of the pus films examined the bacillus alone was found and in 53 per cent. both bacillus and staphylococcus were observed. On a special acid-serum agar he obtained pure cultures. His agglutination tests were positive in some cases. Inoculation tests with guinea-pigs were negative but he transferred a pure culture to an arm and produced pustules from which he recovered pure cultures. He also noted a coccus which would not liquefy gelatin.

In the same year Südmersen and Thompson,[13] working with two strains, one obtained from Dr. Spetta of St. George Hospital, found that the bacillus showed different forms according to the medium used for its cultivation; in one of their photomicrographs distinct branching forms are observed. Anaerobic cultures were uniformly successful and after a few generations of anaerobic cultivation on acid-serum agar it would grow equally well aerobically. Six-day cultures of their own strain on acid blood agar were not pathogenic to rabbits or guinea-pigs but were fatal to mice; the organism was regained from the spleen. Südmersen and Thompson suggested a probable relationship of their organism to the *B. diphtheriæ*.

In the same year Hartwell and Streeter[14] worked with the organism and asserted that it was strictly anaerobic.

In January, 1910, Western[15] in an article on "The Vaccine Treatment of Acne Vulgaris" accepts the acne bacillus as the cause of the comedo and pustule.

Molesworth[16] also in 1910 describes the cultural characteristics of the microbacillus. He cultivated it in 2 per cent. glucose agar but always anaerobically either in deep shake tubes or stabs or slopes incubated anaerobically. It would never grow aerobically. He obtained a culture from Sabouraud from which he made cultures in a similar manner, but cultures obtained from Flemming of his bacillus would not develop under anaerobic conditions. These cultures were all shown to Sabouraud, who accepted Molesworth's as identical with the organism described by him, but a culture of Flemming's organism was rejected as not being the microbacillus. Inoculations made with the microbacillus on guinea-pigs were always negative and no result was obtained by rubbing in large quantities of the culture in human subjects. From its morphologic and cultural characters and its marked pathogenicity for guinea-pigs and white mice, he concluded that Gilchrist's organism was a form of streptothrix.

In 1910 Whitfield,[17] who controlled Molesworth's work, believes that the microbacillus cultivated by him is the organism found in the comedo, but questions if Flemming's is the same microbe. Whitfield accepts the bacillus as the cause of the comedo but not the pustule, its presence in the pustule being due to the breaking up of the comedo which process releases into the cavity beneath myriads of the organisms. In his opinion the pustule is due to secondary infection by the staphylococcus. Flemming, in defending his work against the criticism of Molesworth, states that he transferred the pus *en masse* on the mediums, making it to some extent an anaerobic culture, but insists that it grew aerobically in subcultures.

In December, 1910, Engman[18] published his article on "Treatment of Acne Vulgaris with Acne-Bacillus-Suspensions." In this he reviews his work in Unna's laboratory and his later efforts to cultivate the bacillus which he believes to be the causative agent both in the comedo and in some forms of suppurative acne. He succeeded in obtaining growths in 1902, 1904 and 1908, which he identified as the organism with which he had worked in Unna's laboratory. The cultures he obtained in 1908 he took to Johns Hopkins Hospital to compare with Gilchrist's. On examining Engman's organism, Gilchrist said he thought it was identical with the one with which he had been working. They were then submitted for comparison to Professor Welch, who also thought they were identical. Engman used nutrient agar either neutral or slightly acid as his medium. His organism was fatal to rabbits and guinea-pigs and it was recovered post mortem. His agglutination tests were negative.

Lovejoy and Hastings[19] in 1911 described the bacillus as being from 1 to 4 microns long and 0.5 micron in width, arranged singly or in pairs. The older forms

10. Hallé and Civatte: Ann. de dermat. et de syph., 1907, p. 184.
11. Unna: Med Klin., 1908, p. 1747.
12. Flemming: Lancet, London, 1909, i, 1035; Brit. Med. Jour., 1910, i, 1382.
13. Südmersen and Thompson: Jour. Path. and Bacteriol., 1909, p. 224
14. Hartwell and Streeter: Boston Med. and Surg. Jour., 1909, p. 882.
15. Western: Brit. Jour. Dermat., 1910, p. 6.
16. Molesworth: Brit. Med. Jour., 1910, i, 1227.
17. Whitfield: Internat. Clin., 1909, xi, 183.
18. Engman: Jour. Cutan. Dis., 1910, p. 553; Interstate Med. Jour., December, 1910.
19. Lovejoy and Hastings: Jour. Cutan. Dis., February, 1911.

show dark staining spots usually at the extremity, but some may appear along the organism, giving it a chain-like appearance. They found the organism in sebaceous secretions in apparently healthy skin, as well as in the comedo and pustule. They succeeded in cultivating the bacillus anaerobically on various mediums, but it grew best on plain agar or 2 per cent. glucose agar.

Morris and Doré[20] accept the acne bacillus as the cause of the comedo and in many instances as the factor in suppuration.

Last year Schwenter-Trachsler's work[21] appeared, in which she denies the bacillus any part in the production of either comedo or pustule. She accepts Unna's later opinion that a coccus which yields a white growth, and which she is satisfied is not *Staphylococcus albus,* is the cause of the hyperkeratosis, comedo and pustule as well as all pathologic changes that take place in the corium. She succeeded in isolating it from a single organism by Burri's method and transferred it to the face of an acne-free girl aged 14 years and produced comedones, from which she recovered the coccus.

Varney and Clark,[22] working independently of Schwenter-Trachsler, obtained from acne-like lesions, which persisted beyond the usual acne age, a diplococcus which gave a white culture. Morphologically it was unlike *Staphylococcus albus,* and agglutination reaction proved it not to be this organism. In a personal letter which I received recently, Dr. Schwenter-Trachsler states that she has twice produced comedones on normal skin since her article was published.

DIFFERENT FINDINGS

From the foregoing it will be seen that a diversity of opinion exists at the present time as to the bacterial etiology of acne, even among those who have had the benefits of extensive laboratory facilities. Among those who believe that a bacillus is the cause of both comedo and pustule are Engman, Hodara, Gilchrist, Flemming, Western, Molesworth, Lovejoy and Hastings, Hartwell and Streeter, Südmersen and Thompson and Morris and Doré. Those who accept the bacillus as the cause of the comedo but maintain that a secondary infection is necessary for the production of suppuration are Sabouraud and Whitfield. Unna, Lomry, Bollack, Schamberg and Hallé and Civatte question its having any etiologic significance whatever. Unna and Schwenter-Trachsler hold that both comedo and pustule are due to a special coccus that produces a white growth on culture mediums. This is such a new theory and so at variance with that of all other observers that it should be confirmed by other workers in the field before it is accepted. Söllner's coccus and Varney and Clark's diplococcus may be similar to the one of which Unna speaks and with which Schwenter-Trachsler produced comedones, but it will take much work to prove it. Although eighteen years have passed since Lomry did his work, there has been no confirmation of it by other workers, while many observers have taken issue with him.

That there is a bacillus constantly present in at least all enlarged sebaceous follicles after the age of puberty, as shown by Beck, Schamberg and Hallé and Civatte, which may under normal conditions remain harmless, is no doubt accepted at present by all dermatologists. But the preponderance of opinion is decidedly in favor of the pathogenicity of the organism in susceptible individuals; and why Unna abandoned this theory after Beck's work and accepted a peculiar coccus as the causative agent before any experimental work had been done with this organism is to incomprehensible to me, especially since Beck himself leaves the impression that he believes the bacillus might under certain conditions become pathogenic.

Among those who agree that a bacillus is the etiologic factor in both the comedo and pustule, there is considerable difference of opinion as to its morphology, cultural characters, pathogenicity for animals, and its response to serologic tests. Some describe it as being as short as 0.6 micron and others as long as 4 microns; some could demonstrate a capsule, others could not; some found branching forms, others deny their existence; some cultured it aerobically and others have been unable to obtain cultures except under strict anaerobic conditions, while still others have cultured it anaerobically and subcultured it aerobically. In the hands of some it has been found pathogenic for mice, guinea-pigs and rabbits, while in the hands of others it has been fatal to mice only, while still others consider it non-pathogenic for all animals. Agglutination tests have been reported as positive by some and negative by others.

ONE ORGANISM UNDER DIFFERENT PHASES

The differences have been so marked that one would be justified in believing that all or nearly all were dealing with different organisms, and for some time I thought this was true until I observed it in my own laboratory and saw it appear and act differently under differing conditions and had again reviewed Südmersen and Thompson's article of three years ago. I am now convinced that at least a majority are observing simply different phases of the same organism. These different phases and the assertions of the various authors that the bacillus they observed in smears and cultivated was the true etiologic factor in acne is not only little short of ridiculous, but is the cause of all the confusion that has arisen on the subject. Fortunately for American dermatology this condition does not exist on this side of the Atlantic, but has been confined to England, Germany and France.

Engman, who observed the bacillus first in Unna's laboratory nineteen years ago and assisted him in the preparation of his work on pathology of the skin, continued his work in this country and has to date found no reason to change his opinion as to the etiologic significance of the organism.

The first work done in this country was by Gilchrist in 1899, which he confirmed and elaborated in 1903; and it remains to-day, especially since controlled by Engman, as the most convincing argument in favor of the theory that acne in all of its various clinical manifestations is due to the *Bacillus acne.*

Molesworth's statement that Gilchrist's bacillus is a form of streptothrix was due, no doubt, to the latter finding branching forms of the organism and their pathogenicity for mice and guinea-pigs; but his position seems hardly tenable since he accepts the work of Südmersen and Thompson, who found branching forms cultures of which were fatal to mice and who apparently were not aware of Gilchrist's work, as they do not quote him.

I have observed branching forms in a 4-weeks-old culture on Sabouraud's medium.

Hallé and Civatte question Gilchrist's bacillus because they could not obtain growths aerobically. Their position is also refuted by Südmersen and Thompson, who, with their wonderful laboratory facilities, working with

20. Morris and Doré: Brit. Jour. Dermat., October, 1911.
21. Schwenter-Trachsler: Dermatol. Studien (Unna Festschrift) 1911, p. 311.
22. Varney and Clark: Jour. Cutan. Dis., February, 1912.

only two strains, obtained aerobic cultures and demonstrated the branching form occurring under these conditions.

Except to report my results from cultures obtained from Parke, Davis & Co. and Mulford, from which they prepare stock bacterins, I shall offer nothing further from my own work as it confirms only in part the work done by Engman, Gilchrist and Südmersen and Thompson and in no way refutes any of the observations made by them, and dermatologic literature is already too crowded with the other sort. Morphologically and culturally these bacilli appear as different organisms. I was able to obtain subcultures of Parke, Davis & Co.'s culture both aerobically and anaerobically, but I have so far been unsuccessful in subculturing the strains sent me by Mulford. Regardless of the failures, I am unwilling with my present knowledge of the organism to believe that either or both are not cultures of the original bacillus seen by Unna in the comedo. I am more inclined at present to accept both as pure cultures of the acne bacillus existing under different conditions.

DIRECTION OF FURTHER RESEARCH

Further work along this line should be done with one of two aims in view: that of confirming or refuting the etiologic significance of the bacillus in all its various manifestations as exemplified by the work of Engman, Gilchrist and Südmersen and Thompson, or confirming or refuting the assertions made by Unna and Schwenter-Trachsler in regard to the rôle played by the "milk-white coccus." It is along these lines that I shall continue my work in this field.

The first report on the use of vaccines of the acne bacillus as a therapeutic measure were to some extent disappointing, no doubt because of improper technic in the administration. Gilchrist gave doses of 100 million which were followed by a markedly negative phase; this also occurred in Flemming's case in which only 10 million were administered. In three of my own cases an alarming increase in the number of lesions followed doses of 25 million, 30 million and 35 million, respectively, of a stock vaccine. When doses of much smaller proportions were used the results were decidedly more encouraging. Engman, the most enthusiastic of all observers, rarely gives over 5 million and his usual dose is 3 million at from five-day to seven-day intervals. He regards it as one of the most brilliant therapeutic agents he has yet seen in dermatology.

Western used either the stock or autogenous vaccine in doses of 5 to 10 million at seven-day to ten-day intervals with marked beneficial results, and Flemming has reduced his dose to 6 to 10 million given weekly.

Gilchrist finding doses of 100 million too large, recommends weekly doses, the initial amount being 5 million increased each week to 30 million, being governed by the clinical condition.

Morris and Doré, the least enthusiastic of all reporters, using a stock vaccine, admit that it is a useful addition to our therapeutic agents.

Lovejoy[23] obtained brilliant results from doses of 3 million at five-day intervals, this amount being practically continued throughout the course of treatment, no patient receiving a larger amount than 5 million. He considers that the results obtained from polyvalent stock were fully as satisfactory as those obtained from an autogenous vaccine.

I have used none other than stock vaccine from various sources, and while I cannot as yet claim for it the brilliant results observed by others the beneficial effect obtained in a number of cases has been so marked that I would be loath to treat a patient without its assistance.

These happy results could not have been obtained if we were all using a vaccine from a different organism. If there were no other reason presented for believing that the different findings over which so much confusion has arisen were simply different phases of the same microbe, I am convinced that these results are conclusive.

I wish to offer my thanks to Parke, Davis & Co., and Mulford for cultures of the acne bacillus, to Drs. Sabouraud, Whitfield and Paul Unna, Jr., for directing my attention to certain literature on the subject and to Dr. Varney for the cultures of the Varney and Clark diplococcus.

23. Lovejoy: Am. Jour. Med. Sc., May, 1912, p. 693.

ABSTRACT OF DISCUSSION

DR. M. L. RAVITCH, Louisville: I cannot agree that the acne bacillus or any other bacillus is the real cause of acne. To my mind, the bacillus is incidental or secondary. All who have followed the etiology of acne will agree that the *prima causa* of this affection is that rather critical or transitory stage when the girl passes into womanhood and the boy into manhood. To my mind, anaphylactic reaction is the real cause of acne. The hyperactivities and hypersecretive power of the generative organs during this period is apparent. The absorption of the secretions of the ovaries and the seminal vesicles produces a foreign protein in the system, the patient becomes sensitized, and we have a reaction that produces a symptom-complex called acne. The duration of the disease and the mode of treatment substantiate my theory. I believe that the acne bacillus is only incidental or secondary to the reaction produced by a foreign protein.

DR. H. R. VARNEY, Detroit: I feel inclined to ally myself with the group of investigators who believe that the acne bacillus is the etiologic factor of the comedo. According to Dr. Haase's conclusions, we have arrived at the stage where acne must be allied either with a bacillus or a coccus. In the cases reported a year ago, I succeeded in isolating a diplococcus, and I repeated my experiments several times before I could actually believe that fact. This finding I verified in six cases, which were seen by Dr. George T. Jackson and others, in which the clinical picture of acne was unmistakable. We were obliged to classify the cases as acne vulgaris. There were no comedones, the lesions were located deep in the true skin and there was very little tendency to rupture. The amount of pus contained in the lesions was very small, and they were very chronic in their nature. After observing the course of this organism in two cases, it recalled to my mind a like clinical picture in four other cases of acne that had been under my care and had not been cured. On reexamining these cases I found the same diplococcus, which from animal experimentation and from agglutination tests is a distinct organism which is found in the contents of these lesions, and which has been isolated a number of times. In the group of cases which I saw, the average duration of the disease was more than seventeen years; one had lasted for twenty-four years. Inoculation of autogenous suspensions brought about cure, which was not accomplished by repeated inoculations of confined staphylococcus stock suspensions.

DR. E. S. LAIN, Oklahoma City: Dr. Haase's conclusions are justifiable in a sense, and yet I have been favoring the idea presented by Dr. Varney a few months ago, that we had a separate organism to deal with in many cases. I would ask Dr. Haase to give us the percentage of recoveries or improvement with his vaccine, and the class of cases in which he employed it.

DR. MARCUS HAASE, Memphis: The acne bacterin to which Dr. Lain referred is used only for diagnostic purposes and not for treatment. It was used to demonstrate the fact that these bacilli were identical. The bacterins simply verified the fact that they were all of one variety—that all these cultures were the same. Dr. Ravitch misunderstood me. In this experimental work, which is only preliminary and will serve only as a basis for future work, I had no definite scheme in view.

SARCOMA OF THE VAGINA*

P. BROOKE BLAND, M.D.
PHILADELPHIA

Tumors of the vagina are comparatively infrequent. New growths of all varieties, however, both cystic and solid, occasionally originate in the structures of this organ.

Cystic tumors form a goodly percentage of all vaginal growths, although they are not common. Of the solid tumors arising in this canal, the fibromyomas are the most common, but these are not frequent. Malignant tumors of both epithelial and connective-tissue origin do occur, and these, too, are unusual.

Rarely cases of primary chorio-epithelioma and endothelioma are reported and it is said that carcinoma of this organ forms less than 1 per cent. of all types of epithelial malignant disease developing in women. It has been estimated, according to one author, that only about 0.02 per cent. of all carcinomas of the genital tract arise primarily in the vagina. Primary sarcoma, too, of this canal is a rare formation and the literature, dating back to an early period, contains but a total of 104 cases. Two of these were reported before the last (May) meeting of the Philadelphia County Obstetrical Society by Tracy. This number, to which I add two new ones, brings the total of cases reported to date to 106.

This variety of malignant disease may arise in any portion of the female genital tract, from the vulva to the pelvic peritoneum. In the vagina it has been found at all ages. It is, however, most common in the first, fourth and sixth decades of life. In McFarland's[1] collection of 102 cases there was one instance of the tumor being congenital, though six so-called congenital cases have been described. The only case in which it is positively known, however, that the tumor was present at birth was the instance described by Granicher. The tumor may also arise very late in life and one case is recorded in McFarland's series, in which the patient came to operation when 82 years of age. All cellular types of this tumor have been reported to develop in the vagina, including the small and large round-cell, small and large spindle-cell, mixed cell, alveolar and melanotic, but the mixed type is the most common.

Sarcoma of the vagina might be divided clinically into two varieties: (1) that occurring rather characteristically in early life as a more or less grape-like or polypoid tumor with tendency to early degeneration; and (2) that occurring late in life and characteristically as a firm, more or less circumscribed tumor.

The grape-like growth or the so-called sarcoma botryoides occurs very early in life and the thirty-four cases recorded by McFarland, with my own, making thirty-five, appeared within the first half of the first decade and twenty-nine of these occurred before the third year of life. This does not mean that the circumscribed form is limited to the adult and that it never appears in infancy, for McFarland's report shows that eight cases out of sixty-eight of the adult type recorded developed in children from 8 to 31 months old. From this period, however, there was a gap until the first half of the second decade, 14 years. This shows a marked infrequency of the adult form in infant life.

The occurrence of this special form of infantile sarcoma — sarcoma botryoides — the grape-like sarcoma — of which thirty-five cases, including my own, are now on record, makes it decidedly more frequent in infancy than in any other period of life. The first case of this character, according to McFarland's paper, appears to have been described and reported by Guersant in 1854, though McFarland says that "It is difficult to decide what would have been the true histologic nature of many other tumors recorded earlier, or about the same time, as malignant polypi of the vagina." McFarland carefully reviewed a number of such cases, but they were rejected and the policy was adopted of following the example of the earlier compilers, who accept Guersant's case as the first to be reported.

It appears that the first careful pathologic study of this peculiar tumor was conducted by Kaschewarowa-Rudwena, who reported three cases, one of which occurred in a bitch. While this tumor is characterized clinically by its development in very early or infantile life and by its peculiar macroscopic formation into polypoid or grape-like nodules, yet it cannot be placed histologically in a separate or distinct class, because the cellular architecture of this growth is as varied as the adult type and as varied as sarcoma developing in other parts of the body. In other words, the histologic picture of sarcoma botryoides does not differ from the common type of sarcoma occurring elsewhere. This feature is well shown in the following table:

McFARLAND'S TABLE SHOWING AGE INCIDENCE, HISTOLOGIC CHARACTER AND TERMINATION OF REPORTED CASES OF GRAPE-LIKE SARCOMA OF INFANCY, OR SARCOMA BOTRYOIDES VAGINÆ

Age of Patient	Nature of the Tumor	Termination
Not given.	..... ?	?
Congenital.	..... ?	Died.
3 months.	Spindle-cell sarcoma	Died.
6 months.	Spindle-cell sarcoma	Died (of bronchopneumonia).
6 months.	Round- and spindle-cell sarcoma	Died.
7 months.	Round- and spindle-cell sarcoma	Died
8 months.	..... ?	Died
9 months.	..... ?	No return in two months.
12 months.	Myosarcoma	Died.
18 months.	..... ?	Died.
18 months.	Myofibrosarcoma	Died.
18 months.	Round- and spindle-cell sarcoma	Died.
18 months.	Spindle-cell sarcoma	Died.
21 months.	..... ?	Died.
24 months.	..... ?	Died.
24 months.	..... ?	?
24 months.	Myxosarcoma	Died.
28 months.	Fibrosarcoma	Died.
28 months.	Myosarcoma	Died.
30 months.	Round- and spindle-cell sarcoma	Recovered; no return in three years.
30 months.	..... ?	Died.
30 months.	..... ?	Died.
30 months.	Fibrosarcoma	?
30 months.	..... ?	Died.
32 months.	..... ?	?
36 months.	Spindle-cell sarcoma	?
36 months.	..... ?	Died.
36 months.	Small round-cell sarcoma	Died.
40 months.	Fibrosarcoma	Died.
42 months.	Myosarcoma	Died.
44 months.	..... ?	Died.
48 months.	..... ?	?
53 months.	Round- and spindle-cell sarcoma	Died.
60 months.	Round- and spindle-cell sarcoma	Died.
My case 54 months.	Round-cell sarcoma	Died.

The etiology of this peculiar growth is not known, but three views have been advanced to explain its origin. 1. Some authors believe that it is congenital and that it arises from the papillæ so numerous in the vaginal wall during the first five months of intra-uterine life. No less an authority than Ahlfeld is convinced of this origin, and he is supported in this view by many eminent men. 2. The view accepted by others is that of Cohnheim's theory of embryonal remains. The advocates of this

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at its Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. McFarland: Am. Jour. Med. Sc., April, 1911.

view advance striking arguments to establish their belief: (a) that recurrent masses maintain the polypoid or grape-like form; (b) that projections into the bladder from the original site of the disease assume the grape-like character in a structure in which papillæ are not normally found, and (c) the irregular or varied cellular construction of the tumor, they believe, supports the view of Cohnheim. 3. The third view was that held by Pfannenstiel, who believed that the tumor arose from the endothelium of the lymph and blood-capillaries.

The clinical study of sarcoma botryoides shows that the symptoms are generally the same in all cases. The first manifestation of local disturbance is the appearance of a thin, watery, pinkish, serous discharge. This early becomes bloody and later, as necrotic changes take place, the discharge becomes offensive. This feature was, at times, very marked in the case reported in this paper. It was quite noticeable when the little patient appeared at the hospital dispensary. Later, if the condition is not recognized and removed, a reddish or reddish-purple, grape-like tumor appears at the vulvar orifice. As a rule, the true nature of these tumors is not at first recognized and they are regarded as simple inoffensive polypi and are simply removed. Early recurrence takes place and the patient succumbs.

In one case in McFarland's series, however, in which an early radical operation was performed, including the entire removal of the genital structures, the patient is reported to have recovered and no return was noticed after a lapse of three years. In all the other cases of this series, the tumor recurred; many patients were subjected to repeated operation, with repeated recurrence. Finally they became inoperable, the tumor rapidly filling the vagina, distending the pelvis, invading the bladder and bringing death to the patient either by exhaustion or uremia. The tumor seems to be progressively extending, for in no case was metastasis observed.

Sarcoma of the vagina in the adult runs a clinical course very similar to sarcoma occurring in the vagina of the infant. In the adult the tumor tends to remain localized and while metastasis does occur, it is not the rule. Sarcoma, on the other hand, developing in the vaginal septa does tend to invade the surrounding structures and to early dissemination. This feature was very pronounced in the second case coming under my observation. The latter was an instance of sarcoma developing probably in the vesicovaginal septum.

Concerning the treatment of sarcoma of the vagina, early and radical operation offers the only hope of relief. Even this, in the cases reported, has not been attended with happy results. Only one case of the thirty-five thus far reported was free from a recurrence after a period of three years. In the cases in which *x*-ray has been employed, the condition appears to have been aggravated and, therefore, its use in the treatment of the malady is of doubtful value. The *x*-ray was used in the case reported by Tracy and the early recurrence of the disease he felt was hastened by its employment. It is hard to say whether he was justified in this conclusion, because surprisingly early recurrence is characteristic of practically all vaginal sarcomas.

CASE 1.—*Patient.*—E. C., aged 2 years and 5 months, was born of English parents. There is no history of hereditary disease in the family. Patient had pneumonia and was sick for two weeks when 15 months old. She never had any other illness. She was breast-fed until the fifteenth month, the breast-feeding being occasionally alternated with bottle-feeding. When 4 weeks old, the child had a slight vaginal discharge, which was thin and of a blood-color. It lasted for one week and appeared as small stained spots on the napkins.

When the child was 23 months old, a vaginal discharge appeared, similar to that when the patient was 4 weeks old. When the symptom appeared the second time, however, it never ceased. At times the discharge was scanty, but always blood-tinged. At other times quite free bleeding occurred, though, as a rule, the discharge was small in amount. Occasionally, it had a very offensive odor and the mother ascribed this feature by saying that "the odor made her sick in the stomach." Immediately after the discharge appeared, the family physician was consulted, who had the patient under his care for one week, directing that the parts should be irrigated every day with a weak solution of liquor cresolis compositus.

After a week's treatment, the patient was taken to one of the large hospitals in Philadelphia, where she was examined without anesthesia. Cover-glass smears were collected by the physician in this institution and the mother was instructed to return with the patient in two days. She did this and the physician told her the smears taken were unsatisfactory. She returned to the hospital after a few days when an examination was made and the physician informed the mother that a growth was present in the vagina. The child, however, could not be admitted to the institution at that time, because the children's department was under quarantine on account of diphtheria. She was at that time referred to another hospital, which she visited and here cover-glass smears were again collected and the physician in charge stated that the child was suffering from a transmissible disease and could not be admitted to the wards. The mother was given a dark solution with instructions to irrigate the vagina twice daily and return later.

After ten days of this treatment, the child was admitted to this institution. She was kept in the hospital for three days when the mother was advised to take the child home, because the patient had a contagious disease and could not be treated in the hospital.

Five days later, the mother took the child to the pediatric department of another institution in Philadelphia, where she was kept under observation, receiving vaginal douches, for a period of four weeks, or longer, when she was brought to the Gynecological Department of Jefferson Medical College Hospital. With this history, we determined that the only satisfactory manner to examine the child was under anesthesia. Chloroform was, therefore, administered and a local examination made with a small urethral speculum. As soon as the vaginal walls were separated, a small grape-sized, bilobulated, reddish-purple tumor was found, originating from the left anterior vaginal wall. It was freely movable and rather elastic in consistency. It was attached to the wall of the vagina by a fairly wide base.

Operation.—On April 12, the patient was chloroformed and the tumor with the subjacent vaginal wall was removed by Dr. E. E. Montgomery. There was very little bleeding from the operative field. The vaginal wall was packed lightly with iodoform gauze and the patient was taken home in the afternoon.

On May 10 the symptoms reappeared and examination under anesthesia revealed a recurrence of the tumor at the site of the previous operation. The patient was reoperated on on May 13 and all visible abnormal tissue was removed. She was discharged from the hospital on May 30 and all symptoms at this time had apparently subsided. She was returned to the hospital on September 1 when examination revealed a large suprapubic abdominal distention with a history of incontinence of urine. The tumor was extremely hard and tender and we, at first glance, concluded that she had a recurrence of the tumor in the abdominal cavity. After a careful examination, however, we found the trouble was due to over-distention of the bladder as the result of a stricture of the urethra. This condition resulted from contraction of the scar at the site of operation. The patient never regained control of her bladder and was catheterized three times every day until she died.

About the middle of September a dark, blood-colored, or purple tumor appeared in the left groin. This increased quite rapidly in size, but did not seem to cause any local trouble. About a week later a similar nodule appeared in the region of the navel and about this time, the patient was seized with more or less constant vomiting and was not able to retain any nourishment whatever. She vomited several times each day and night for eleven days. Her death occurred on Nov. 2, 1911. After the second operation she never had any sign of a recurrence of the disease in the vagina. Her age at death was 2 years, 10 months and 9 days.

Pathologic Report (Dr. A. G. Ellis).—The specimen consists of several small pieces of reddish-purple tissue, extremely soft in consistency. This was fixed in alcoholic solution of bichlorid and embedded in paraffin. Microscopic study of stained sections of the specimen shows the tissue to be composed of masses of round cells. These have very prominent nuclei, and very scanty intercellular material is present. Fibrous tissue is not prominent. Blood-vessels are seen among the masses of cells and their walls appear to be extremely thin. The diagnosis is large round-cell sarcoma of the vagina.

CASE 2.—*Patient.*—A. W., aged 45, married, of Hebrew parentage, was operated on Aug. 3, 1911. She had never been pregnant. The growth in this patient had its origin in the anterior vaginal wall and was about the size of an egg. It was more or less soft and elastic in consistency and attached to the vaginal wall by a broad base. The superficial portion of the tumor was of a reddish-purple color, while the interior was of a grayish hue. The central portion of the mass was soft and friable. This patient also had a large mass immediately above Poupart's ligament, which extended to the crest of the ilium and into the pelvis. This enlargement was more or less uniform and firm in consistency. The vaginal tumor and also the masses in the right iliac fossa and pelvis were removed. The patient made an uninterrupted recovery, but died suddenly three months after the operation.

Pathologic Report (Dr. A. G. Ellis).—The microscope reveals stained sections of the primary growth to be composed largely of round and oval cells. They vary considerably in size, but none are what one would call large. The protoplasm of the cells is indistinct, though the nuclei are fairly well stained. These cells are arranged in irregular masses, due to the presence of an ill-defined stroma of connective tissue. Blood-vessels are not numerous, but are occasionally seen within the cell masses and their walls are thin. At numerous points, areas of hemorrhage are noticed, some being accompanied by necrosis of the tissue. In other places, inflammatory processes are manifested by the presence of collections of polynuclear cells. The diagnosis is alveolar sarcoma of vaginal wall with secondary involvement of the glands and structures of the right inguinal region.

CONCLUSIONS

1. All genital discharges in infants should be regarded with grave suspicion and careful search should be instituted for its cause.

2. The examination of infants exhibiting a vaginal discharge should include more than simply the collection of cover-glass smears and their examination with the microscope to determine the presence or absence of gonococci.

3. All vaginal examination of infants should include inspection of the vaginal canal through a speculum and this is best accomplished under chloroform anesthesia.

4. All tumors of the vagina in infants should be regarded with suspicion and fear, and a haphazard diagnosis should never be made. The diagnosis of vaginal tumors should be established by the microscope.

5. Sarcoma botryoides vaginæ is most deadly and what little hope is offered can only be given after early radical extirpation.

Finally, in concluding this report, I wish to state that I have quoted freely from the excellent paper of Dr. Joseph McFarland (Am. Jour. Med. Sc., April, 1911).

1729 Pine Street.

ABSTRACT OF DISCUSSION

DR. C. O. KEPLER, Boston: Should the so-called precocious menstruation of infants, occurring as it does in the first few days of life, also be regarded with suspicion? A number of such cases have come under my observation.

DR. P. B. BLAND, Philadelphia: The patient had a bloody discharge at the fourth week, but I do not feel like saying that it had any connection with the development of this tumor; still I believe that we should regard hemorrhage in infants just as seriously as we regard hemorrhage in advanced life. Hemorrhage calls for a vaginal examination whether in adults or in children.

THE PATHOLOGY AND CLASSIFICATION OF CHRONIC JOINT DISEASE *

LEONARD W. ELY, M.D.
DENVER

Last year it was my privilege to address this Section on the subject of the pathology of joint tuberculosis, and I made the statement that until the pathologist should lay down an exact pathology of the disease, it would be futile to expect its rational treatment. The same may be said of all chronic joint diseases. The multiplicity of names and of classifications makes their study extremely difficult, and in the end we shall probably be obliged to discard much that has been put forward.

Take the name "arthritis deformans," for instance—a hybrid term signifying a deforming inflammation of a joint. Any joint inflammation, acute or chronic, may be deforming. Tuberculosis would certainly fall under this head. The term is an unfortunate one, inexact, meaningless and confusing. It adopts for the designation of a special class of disease a symptom common to many diseases not intended for inclusion in this class, and not possessed by some that, as we shall see, should really be included in it.

CONFUSION IN CLASSIFICATION

Again, as to classification: when to one type of chronic arthritis Goldthwait gives the name "atrophic"; Nichols and Richardson "proliferative"; the English writers "rheumatoid"; and others "metabolic," it is evident that not all have succeeded in grasping the essential feature of the disease, but that some at least have based their classification on non-essential features. We are directing our attack not on a united army but on a house divided against itself, most of the members of which acknowledge the inadequacy of their scheme of pathology and eagerly await a better. Much of the structure has been built on clinical experience, and this will be easy to overturn. Some is the result of careful pathologic work, and with this we may have more difficulty. In spite of its established place in medical writings, and in spite of the eminence of its originator, we shall do well for the reasons stated above to avoid the use of the term "arthritis deformans."

We cannot classify these chronic joint diseases on the basis of their cause, for the cause of many of them is

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

* From the Laboratory of the University of Colorado.

not definitely known. I believe that they are all infectious in their origin, but the infectious nature of some of them has not been proved. It is certain that those whose cause we know, like syphilis, tuberculosis and gonorrhea, are infectious. If we study the history of the subject we shall find that the infectious theory has often made slow headway. Less than two decades ago gonorrheal arthritis was held by some eminent authorities to be due to reflex irritation from the urethral mucous membrane.

Again, we must not fall into the error of classifying the cases by the results of a morbid process rather than by the morbid process itself, and I believe that all classifications based on changes in the bone itself or in the cartilage are open to this objection. My examination of many joints in the laboratory forces me to believe that neither of these tissues plays an active part in any chronic joint disease, but that both merely show the results of disease. The changes in the cartilage may be manifold; it may be thickened or thinned, smooth and homogeneous or rough and fibrillated. It may be broken up, or divided into layers more or less distinct. Finally, its structure may be so fantastic as to defy description. Thus the cartilage gives no basis for classification.

As to the bone itself: the trabeculæ may be thinned or thickened or dead. Sometimes in one part of a joint they may be thinned, in another thickened, in another dead, so that it is manifestly impossible to classify joint diseases on the state of the bone trabeculæ.

A SOUND BASIS FOR CLASSIFICATION

When we come to a study of the bone-marrow and of the synovia we find a different state of affairs, and on the behavior of these two tissues we can apparently base a classification that is comprehensive and sufficient. We include with the marrow the inner layer of the periosteum, the reaction of which to disease is usually similar to that of the subjacent marrow.

As far as I have been able to trace the matter out, all chronic joint diseases fall into two main classes:

1. Cases characterized by proliferation of the synovia and of the lymphoid marrow or of both. As a result of the proliferation of these two tissues, which might be termed the parenchyma of the joint, the cartilage and bone — the stroma, so to speak — atrophy.

2. Cases characterized by a degeneration of the synovia and of the lymphoid marrow. As a result of this, the bone and cartilage show a distinct tendency to hypertrophy.

Under the first class would come tuberculosis, ordinary syphilitic synovitis, "chronic" synovitis of obscure causation, intermittent synovitis, and the infectious and atrophic arthritis of Goldthwait and others — the proliferative type of Nichols and Richardson, the metabolic osteo-arthritis of Nathan, and the rheumatoid arthritis of the English writers. All cases of "villous arthritis" belong under this heading.

In the second class are included the cases variously denominated as osteo-arthritis by the English writers, hypertrophic arthritis by Goldthwait, and the degenerative type by Nichols and Richardson. Heberden's nodes and morbus coxæ senilis are members of this class, as are probably also Charcot's joints.

Let me briefly sketch the main pathologic changes found in the two types.

TYPE I

The disease may begin in the synovia and spread to the lymphoid marrow, it may begin in the marrow and spread to the synovia, or it may remain indefinitely in its original host. It never involves any other tissues except indirectly by disturbing their nutrition. Tuberculosis forms an apparent exception to this, but as long as no secondary infection has taken place the exception is only apparent. The synovia proliferates, thickens and shows a tendency to villous formation. Under the microscope the thickening and hypertrophy are more apparent, reaching down to the fibrous layer of the capsule — the ligament or fascia. Signs of general inflammation are present, and the membrane is packed with lymphoid cells and is wont to encroach on the joint cartilage. The whole morbid process can be interpreted as a proliferation of the active constituents of the joint at the expense of the passive. In the later stages of the disease the synovia may undergo a fibrous change.

The marrow shows changes similar to those found in the synovia. Foci of active inflammation are found in it,[1] and in most varieties of the process a proliferation of its connective-tissue elements.[2] In tuberculosis the characteristic tubercles are seen in the marrow as well as in the synovia.

As the result of these changes in the marrow the bone trabeculæ, drawing their nutrition from the marrow, undergo atrophy. If the process be an intense one (as in tuberculosis) the trabeculæ may be killed. As a result of the changes in the marrow and in the synovia, the cartilage, deriving its nutrition probably from them both, also degenerates and atrophies. The proliferating granulation tissue from the marrow bursts through it, invades the joint, and may form adhesions with the proliferating synovia and with the proliferating marrow of the other articulating bone. In this way the cartilage, encroached on at the sides by the synovia and attacked below by the granulations in the marrow, may disappear entirely, or may remain as thin islands between layers of fibrous tissue.

The result of this process is an ankylosis more or less complete. Usually the ankylosis is fibrous, occasionally bony. When a complete bony ankylosis takes place the disease ceases.

Pathologic identity entails identity of symptoms and of physical signs; hence we are not surprised to learn that the differential diagnosis of the various forms of chronic synovitis cannot be made from the examination of a single joint. It is only from the history of the case, from its course, from its complications, from the state of the rest of the body, and possibly from a laboratory examination of the synovia that we can arrive at a definite conclusion.

The same may be said of those cases with bony involvement. Skiagrams, the physical signs and the symptoms may be practically identical in all the diseases of this type, and if we would differentiate them we must avail ourselves of other aids. Thus, the clinical picture of a tuberculous joint may be identical with that of an "atrophic" (or "proliferative") arthritis,[3] but tuberculosis is almost invariably uni-articular, the other multi-articular. Tuberculosis is often accompanied by abscess formation and by secondary infection; the other is never accompanied by them. Again, the microscope or the animal test or a tuberculin reaction may be needed to decide.

1. White, W. Hale: Guy's Hospital Reports, 1902; Nathan: Am. Jour. Med. Sc., 1909, cxxxvii, 817.

2. Nichols and Richardson: Jour. Med. Research, 1909, xxi, pp. 149-221.

3. In Hale White's article appears an enlarged drawing of a section of a joint afflicted with "atrophic" arthritis (rheumatoid), that needs only the insertion of a few tubercles to make it characteristic of tuberculosis.

Now there may be variations from this pathologic process in diseases of this type, but they are of minor significance. It may be said that the various diseases which comprise it do not differ among themselves more than do the various cases of the same disease. Thus, the fundamental principles of the pathology of joint tuberculosis are always the same, but some cases are accompanied by an exudate in the joint (of various kinds), others are not; in some the synovia is soft and "fungous," in others it is fibrous; in parts of one joint the bone may be thickened, in others thinned. Macroscopic tubercles may be present or absent, the constitution may be affected or it may not, the temperature may be normal or fever may be present, the onset may be fairly acute or distinctly slow and chronic, abscesses and secondary infections may be present or absent.

TYPE II

Roughly speaking, the changes observed in this type are just the reverse of those noted in the first type. As a result of a well-marked degenerative process in the bone-marrow, in the deeper layer of the periosteum and in the synovia, the bone and cartilage hypertrophy. Hence, instead of the synovia and the marrow encroaching on the bone and the cartilage, the cartilage and bone may almost be regarded as encroaching on the bone-marrow and on the synovia. This is the same process that is often observed in other organs of the body. As their essential elements, their parenchyma, degenerate, the connective-tissue stroma proliferates, so that degeneration and proliferation go hand in hand.

The articular cartilage thickens throughout its entire extent. At the same time there is a production of new cartilage and bone underneath the articular cartilage, diminishing the space for the marrow. Now, the articular cartilage derives its nutrition from the subjacent marrow, and when this marrow is replaced by bone, the cartilage fibrillates, degenerates and wears away, leaving the thickened bone bare and grooved in the line of joint motion. The cartilage near the periphery, however, deriving its nutrition largely from the synovia and from the periosteum, does not undergo so soon this degeneration and wearing away, but, maintaining its irregularity, hypertrophies and causes the joint to become flattened and distorted. The hypertrophied masses of cartilage may persist as such, or they may be transformed into bone, causing spurs and exostoses, which interfere with motion. In ball-and-socket joints the new bone formations render the head of the bone too large for its socket, and subluxations may occur. In the hinge joints the irregularity of the bone formation results in lateral distortions as well as in flexions. These lateral distortions are characteristic of the disease.

Portions of proliferated cartilage may be torn loose and form foreign bodies in the joint.

The synovia in this type may appear comparatively normal, or it may proliferate in spots. According to Nichols and Richardson, the localized proliferation may result in the formation of papillary masses, composed of granulation or dense connective tissue. These masses also may later be torn loose and form "joint mice."

Adhesions never form between the opposing joint surfaces, and ankylosis never takes place. We have seen that in the first type adhesions between the bone-ends are due to the proliferation of the synovia and of the granulation tissue in the marrow through the gaps in the cartilage, but in the second type the proliferation is not present. The obstruction to motion is purely mechanical. It will be remembered that in old fractures, where eburnation of the bone-ends has taken place, union is impossible.

HISTOLOGIC PATHOLOGY

The changes in the bone and cartilage have hitherto been regarded as the essential lesions of this disease, and to the naked eye they appear to be most important, but their study has been almost devoid of results. If we carefully examine the behavior of the bone-marrow from which they draw their nutrition, and of the synovia, we shall immediately detect significant alterations in structure, and possibly in the end we may come to regard the bone and cartilage changes as merely the results of these alterations.

If the synovia be examined under the microscope, areas of round-cell infiltration will be seen, especially in the neighborhood of the blood-vessels. The arteries are often thickened and the veins widened. On the surface of the membrane there may be a slight increase of the lymphoid elements, but the membrane itself, while often thickened, cannot be said to be proliferated, but rather degenerated. One sees areas of fat-cells scattered through it and much new fibrous tissue. In some instances also cartilage cells can be distinguished in their capsules, in the new fibrous connective tissue. The pathologic process in the synovia may be interpreted as localized inflammation followed by degeneration. Possibly the signs of inflammation may disappear in the late stages of the disease, but they are certainly present in the active period.

Of the changes one meets in the marrow it is hard to say which are characteristic. Perhaps a fibrous change is met most frequently. The normal marrow may be replaced by new fibrous tissue in whose meshes the marrow-cells may be distinguished. In certain situations the normal reticulum cannot be made out, and the marrow-cells, seen with some difficulty, lie embedded in coarse granular material. Again, the marrow is packed with cells; in spots it appears practically normal. The marrow spaces are less capacious than normal, on account of the production of new bone. Islands of cartilage in the marrow probably represent the early stages of new bone trabeculæ cut across. Occasionally one sees evidences of a productive osteitis. Cysts are sometimes present. The arteries show thickened walls.

The bone is decidedly increased in amount. The trabeculæ are thicker than normal, and in larger numbers. Some of them are composed partially of osteoid tissue. Often one finds a solid layer of bone underneath the cartilage, instead of the normal buttresses. The production of new bone dominates the picture.

720 Marion Street.

ABSTRACT OF DISCUSSION

DR. THOMAS STOTESBURY GITHENS, New York: It is strange, considering the importance and frequency of chronic joint disease, that so little scientific study of the subject has been made. I think that Dr. Ely is correct in saying that the solution of the question must come largely from the pathologist. In making a study of the literature, some years ago, it seemed to me that the cases fell more or less sharply into two classes, as he suggests: a class that apparently begins as an infection, and in which any degenerative changes that follow are due to inflammation; and a class that apparently begins without infection, from some trophic, nervous or metabolic condition (in which, also, the true gout should be included and the joint disease that accompanies syringomyelia and tabes) and is characterized primarily by atrophy, the inflammatory reaction, if any occurs, being secondary.

SOME RECENT ADVANCES IN OUR KNOWLEDGE OF TYPHUS *

JOSEPH GOLDBERGER, M.D.
Passed Assistant Surgeon
AND
JOHN F. ANDERSON, M.D.
Director, Hygienic Laboratory, U. S. Public Health and Marine-Hospital Service
WASHINGTON, D. C.

Up to three years ago our knowledge of typhus stood almost exactly where it was at the time Gerhard and Pennock first convincingly laid down the difference between it and typhoid. Greater advances have been made in the last three years than in all of the immediately preceding three-quarters of a century. These advances are the direct outcome of the discovery that the disease may be inoculated in the monkey. This discovery was made independently first by Nicolle working in Tunis[1] and a few months later by Anderson and Goldberger[2] working in Mexico.

SUSCEPTIBILITY OF THE MONKEY

In July, 1909, Nicolle reported the first successful inoculation in an ape (anthropoid). A few months later by successfully inoculating the rhesus and the capuchin monkey, and showing that these were thereafter immune, Anderson and Goldberger not only confirmed this report, but also proved that the fever induced in the monkey was typhus. Following this in rapid succession came reports of success from Ricketts and Wilder,[3] Gaviño and Girard[4] and others.

Nicolle on account of his previous failures believed at first that the lower apes were not susceptible to inoculation directly from man; he believed that to inoculate these it was necessary to prepare the virus by previous passage through an anthropoid (chimpanzee). This has been shown by all other workers not to be the case, and more recently Nicolle himself has successfully inoculated the rhesus and the bonnet monkey with human blood.

Besides the chimpanzee, four species of monkeys of the genus *Macacus*, two of the genus *Cebus* and one of each of the genera *Cercopithecus*, *Ateles* and *Mycetes* have been found to be susceptible and to react in essentially the same way to an inoculation with virulent blood.

A successful inoculation whether by intravenous, intraperitoneal or subcutaneous injection manifests itself by a fever which develops more or less abruptly after a quiescent period of variable duration, and terminates almost as abruptly as it begins. The incubation period has been found to vary between five and twenty-four days; as a rule, however, the fever begins between six and twelve days after the inoculation. As in man, the temperature of the monkey rises fairly rapidly, at times very abruptly, commonly reaching its fastigium in thirty-six to forty-eight or seventy-two hours. It then continues at, or near, the maximum for a variable period of one or two to five or more days, after which it declines. The defervescence like the onset is much like that in man; it is usually gradual, but frequently it is quite rapid, or even critical. The fever may be accompanied by loss of appetite, thirst, a ruffling of the fur and a drooping posture; more commonly, however, the animal, except for some slight listlessness, manifests hardly any outward signs of illness. Occasionally after the temperature has been normal for three or four days, it goes up a second time and a relapse lasting five to seven or more days develops. Although it is in appearance a very mild disease, we have nevertheless had a typhus mortality in our monkeys of about 2 per cent.

A monkey that has presented a reaction such as just described will be found refractory to a subsequent inoculation and therefore such a reaction is ordinarily a sufficient basis for a diagnosis of typhus. When the fever is so slight as to be doubtful or its course atypical, a definite interpretation cannot be made without the immunity test. Should the test in such instances show that resistance had not been conferred, a diagnosis of typhus is not permissible. A fever that does not immunize cannot in the present state of our knowledge be considered typhus. On the other hand, as we have elsewhere pointed out, resistance to an immunity test cannot in the absence of a previous febrile reaction be construed to mean that the resistance is the result of a vaccination with the virus previously introduced. For we have found that some normal individuals may be transiently or, more rarely, permanently resistant. Failure to recognize these limitations in the interpretation of experimental results has led one notable group of workers to some curious and contradictory conclusions.

Another point of considerable practical importance that is of interest in this connection is the relation of dosage to the character of the reaction. Nicolle and his colleagues are inclined to regard the severity of the febrile reaction as directly related to the dosage of the virus. Our recent studies have served to convince us that this is not a necessary relation, for we have found that of two monkeys inoculated simultaneously with different volumes of the same virulent blood or blood-serum, the one receiving the larger dose may not only present the milder reaction, but, indeed, may altogether fail to become infected.

INFECTIVE PERIOD OF THE BLOOD

The experimental work of Anderson and Goldberger, of Ricketts and Wilder, of Gaviño and Girard, but more particularly that of Nicolle and Conseil has developed a solid basis for the conclusion that the virus of typhus is present in the blood at least throughout the febrile period.

Nicolle and Conseil were the first to try to determine whether the virus is present in the blood either before

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. Nicolle, C.: Reproduction expérimentale du typhus exanthématique chez le singe, Compt. rend. Acad. d. Sc., July 12, 1909, p. 137; Recherches expérimentales sur le typhus exanthématique enterprises à l'Institut Pasteur de Tunis, Ann. de l'Inst. Pasteur, April, 1910; January, 1911; April 25, 1912.

2. Anderson, J. F., and Goldberger, J.: The Relation of Rocky Mountain Spotted Fever to the Typhus Fever of Mexico; a Preliminary Note, Public Health Reports, Washington, Dec. 10, 1909, p. 1861; A Note on the Etiology of "Tabardillo," the Typhus Fever of Mexico, ibid., Dec. 24, 1909, p. 1941; The Infectivity of Tabardillo or Mexican Typhus for Monkeys and Studies on Its Mode of Transmission, ibid., Feb. 18, 1910, p. 177; The Relation of So-Called Brill's Disease to Typhus Fever; an Experimental Demonstration of Their Identity, ibid., Feb. 2, 1912, p. 49; The Etiology of Tabardillo, or Mexican Typhus; an Experimental Investigation, Jour. Med. Research, June, 1910, p. 469; The Experimental Proof of the Identity of Brill's Disease and Typhus Fever, New York Med. Jour., March 11, 1912, p. 976.

3. Ricketts, H. T., and Wilder, R. M.: The Typhus Fever of Mexico (Tabardillo), THE JOURNAL A. M. A., Feb. 5, 1910, p. 463; The Transmission of the Typhus Fever of Mexico (Tabardillo) by Means of the Louse *(Pediculus vestimenti)*, ibid., April 16, 1910, p. 1304; The Etiology of the Typhus Fever (Tabardillo) of Mexico City, ibid., April 23, 1910, p. 1373; Further Investigations Regarding the Etiology of Tabardillo (Mexican Typhus Fever), ibid., July 23, 1910, p. 309.

4. Gaviño, A., and Girard, J.: El tifo experimental en los monos inferiores, Pub. d. Inst. Bacteriol. Nacional, Mexico, May and June, 1910; Tercera nota sobre el tifo experimental en los monos inferiores, ibid., Aug. 23, 1910; Cuarta nota sobre el tifo experimental en los monos inferiores, ibid., Nov. 9, 1910; Estudio experimental sobre el tifo exantematico, ibid., Nov. 12, 1911.

the beginning of the fever or after its defervescence. On the basis of one experiment they concluded that the virus is present in the blood before the beginning of the fever and on the basis of another that it is still there early in convalescence. A critical examination of these experiments satisfied us that, while the blood may be infective both before and after the fever, the experiments themselves did not justify this conclusion; for in one of these their interpretation is based solely on the negative result of the immunity test, the monkey having previously presented no febrile reaction; in another, on a fever of not more than twenty-four to thirty-six hours duration which was not followed by resistance to the immunity test.

As the point in question has important bearings, we thought it desirable to test it further. We therefore tried to infect one monkey with blood obtained from an animal thirty-two hours before the beginning of its fever and another with blood obtained twenty-four to thirty-two hours after the return of its temperature to normal; the former monkey was neither infected nor immunized, but the latter responded with a clearly defined, though mild, febrile reaction of seven days' duration, showing that the blood with which it was inoculated was infective. We conclude, therefore, (1) that satisfactory evidence has not yet been adduced that the blood of the monkey infected with typhus is virulent in the prefebrile stage, and (2) that the blood of the monkey may still be virulent twenty-four to thirty-two hours after the return of the temperature to normal.

SEAT OF THE VIRUS

Recognition of the infectivity of the blood naturally leads to the search for the element or elements of the blood in which the virus is localized.

Nicolle and Jaeggy were the first to consider the problem, and on the basis of a peculiar necrosis of the polynuclears, described by them, suggested that the virus is localized in the white blood-cells. Nicolle, Conor and Conseil[5] have argued in favor of this hypothesis.

Their argument is based chiefly on two series of experiments which they interpret as showing that, of the various elements of the blood separated by centrifugation and washed, the white cells are the most virulent, the plasma is less active and the red corpuscles are deprived of all virulence. Accepting their interpretation it is impossible to see how this points to an intraleukocytic localization of the virus; in order to support their hypothesis the virulence of the various elements of the blood should be in proportion to their richness in leukocytes, and therefore the red corpuscles instead of being avirulent, as Nicolle, Conor and Conseil report, should be, at least, as virulent if not more virulent than the plasma. For it must be borne in mind that separation of the elements of the blood by centrifugation is not absolute; the red corpuscles, as they go to the bottom of the tube, carry with them a not inconsiderable number of leukocytes so that after the separation is completed a leukocyte count will show a vastly greater number of white cells in a given volume of red corpuscles than in the plasma. But even if we assume that the virulence of the various elements of the blood, as given by Nicolle, Conor and Conseil, is proportionate to their richness in leukocytes, this would not, of itself, mean that the parasite is intraleukocytic. All that it would be permissible to infer is that there is a similarity in the behavior of parasite and leukocyte when subjected to centrifugation and this may be equally true of a parasite free in the plasma as of one in the leukocytes.

The fact that the plasma of the centrifugated blood was found by Nicolle, Conor and Conseil to be infective in both series of their experiments as well as the fact that we have found the blood-serum obtained from centrifugated clotted blood infective must, on the whole, be considered as pointing to the existence of an extracellular organism.

As has already been stated, Nicolle, Conor and Conseil believe that the red corpuscles after one washing are no longer infective (or only inconstantly so). We believe this is an error of interpretation, due to a disregard of the possibility that the monkey is not at all times susceptible to infection. In a single experiment made to test this point we found that the corpuscles were infective after three washings. This would appear to suggest that the virus adheres rather closely to the blood-cells. We believe, however, that the real explanation is to be found, at least in large part, in the inherent defect of the method (centrifugation) employed for the separation of the virus and the corpuscles. Just as a considerable number of leukocytes are entangled and carried down by the reds in centrifugating blood so, we believe, is the virus carried down by the precipitated blood-cells.

FILTERABILITY OF THE VIRUS

The question of the filterability of the virus as it exists in the blood has been the subject of considerable research, but the results recorded do not appear to be altogether harmonious.

The first filtration experiments, almost simultaneously reported by Ricketts and Wilder and by Anderson and Goldberger, pointed to the non-filterability of the virus. Later, however, Wilder reported the result of a second filtration experiment made by him in collaboration with Ricketts, which seemed to indicate that the monkey inoculated with the filtrate had been made refractory. A similar result was recorded by Nicolle, Conor and Conseil, who interpreted it as indicating the filterability of the virus.

In our recent work we have met two instances of resistance to the immunity test apparently conferred by an inoculation with filtered serum. In one of these, the monkey successfully resisted two immunity tests, but responded promptly and sharply to the third; in the other, the monkey resisted one immunity test, but yielded when this was repeated. It is clear that in these two cases the resistance could not have been due to vaccination with the filtrate; if such had been the case, the repeated immunity tests should have strengthened this resistance. We believe that the apparent immunity of our two monkeys was simply a transient natural insusceptibility and that this phenomenon explains the results reported by Wilder and by Nicolle, Conor and Conseil. There is therefore no evidence to show that the virus as it exists in the blood is capable of passing through the Berkefeld filter.

This fact, however, does not necessarily mean that it may not be capable of passing in the form in which it exists in the body of the louse. We have tested this by inoculating a monkey with a filtered suspension of crushed body lice. The animal developed no fever, but has resisted several successive immunity tests. This, while it seems to point to the existence of a filterable phase in the body of the louse, being based on a single

5. Nicolle, C., Conor, A., and Conseil, E.: Sur la nature et le siège de l'agent pathogène du typhus exanthématique, Compt. rend. Acad. d. sc., Sept. 18, 1911.

experiment in an animal not necessarily very sensitive, cannot be regarded as conclusive without further corroborative work.

VIABILITY OF THE VIRUS

The virus in the blood is not very highly resistant. We have found that drying for twenty-four hours and heating at 55 C. (131 F.) for five minutes deprives it of infectivity; it may resist freezing, however, for at least eight days.

Gaviño and Girard report that the infectivity of the blood is lost after an hour's contact with phenol in 0.5 per cent. solution, but that it is retained after an hour's contact with saponin in a solution of like strength. They also found that a mixture of 6 c.c. of virulent defibrinated blood and 2 c.c. of ox-bile was infective after an hour's contact at room temperature. These authors point out that the resistance of the exanthematic virus to bile and to saponin, without permitting definite conclusions, is in favor of the bacterial nature of the virus.

TRANSMISSION

To the modern student the epidemiology of typhus at once suggests an insect intermediary. Of the insects that occur to one as possibly playing this rôle, the louse best explains all of the important features of the epidemiology of typhus. Transmission by the louse explains why typhus has been a disease peculiarly associated with misery and poverty, why it has been a vagabond's disease, a disease of jails and army camps — in brief, a disease of filth and overcrowding. This hypothesis was first tested by Nicolle, Comte and Conseil,[6] who were able to report the successful transmission of the disease by means of the bites of body lice (*P. vestimenti*) early in September, 1909. Since then this finding has been confirmed by Ricketts and Wilder,[7] and by ourselves,[8] so that it may be considered as established that typhus fever is transmissible by the bite of this insect.

PERIOD OF INFECTIVITY OF THE LOUSE

Nicolle and Conseil believe that the infectivity of the body louse is limited to the period between the fifth and the seventh day after the infecting feed. They base this opinion on the result of a single experiment. Wilder reports an experiment that seems to indicate that the louse is not infective until the fifth or sixth day after its last contact with the infecting host, but he very correctly points out that it is not justifiable to conclude from a single negative experiment on a single animal, as Nicolle does, that the louse is not infective after the seventh day.

TRANSMISSION BY THE HEAD LOUSE

The possibility of transmission by means of insects other than the body louse was first studied by Ricketts and Wilder, who reported against the flea and the bedbug. On epidemiologic grounds it seems highly probable that neither of these insects plays a part. It occurred to us that the head louse, on account of its close biologic relation to the body louse, might perhaps be capable of transmitting this disease. Putting this idea to the test, we have been able to infect a monkey by the subcutaneous injection of a number of crushed head lice, and in one of three experiments apparently to vaccinate by their bites. This evidence, while highly suggestive, cannot, without confirmation, be considered as proving conclusively that the disease is transmissible by the bite of the head louse (*Pediculus capitis*).

IDENTITY OF BRILL'S DISEASE

One of the most notable recent advances in our knowledge of typhus is the demonstration that this disease, instead of being the exotic plague that it has almost universally been considered, has actually been endemic in this country for many years. Brill,[9] in a series of papers dating from 1898, called attention to a fever prevailing in New York that was generally regarded as an atypical typhoid or paratyphoid, but which he showed could be satisfactorily distinguished from these infections. He pointed out its close clinical resemblance to typhus, from which he differentiated it, however, on certain epidemiologic grounds. Brill's contributions attracted considerable attention and the nature of the disease described by him aroused not a little discussion, opinion being divided as to whether it was an atypical typhoid paratyphoid or typhus, on the one hand, or "a disease of unknown origin," on the other.

In the fall of 1911 we obtained access to a typical case of this fever and, unlike Brill, succeeded in infecting the monkey with it. Following this we tested its relationship to Mexican typhus by a series of cross-immunity tests, and found that monkeys that had recovered from Brill's disease could not be infected with Mexican typhus, and, conversely, that monkeys that we had reason to believe were resistant to Mexican typhus could not be infected with Brill's disease. This reciprocal immunity shows conclusively that the New York (Brill's) disease and Mexican typhus are identical. As the New York disease, or perhaps better, American disease, for it has now been reported, not only from New York, but also from Brooklyn, Philadelphia, Washington and Chicago, is undoubtedly of European origin, we have in this demonstration proof of the identity of the European and the Mexican disease.

This demonstration obliges the American sanitarian to recognize the existence of a problem of which he has heretofore been unaware; it also makes it necessary for the clinician to revise the classical conception of typhus, just as he has had to revise his conceptions of small-pox and yellow fever.

Twenty-Fifth and E Streets N. W.

Note.—In addition to the authorities already cited, the following may be consulted:

Fuerth: Die Fleckfiebererkrankungen des Frühjahres, 1911, in Tsingtau und Untersuchungen über den Erreger des Fleckfiebers, Ztschr. f. Hyg. u. Infectionskrankh., 1912, lxx, No. 3, p. 333.
Lewis, Morris J.: So-Called Brill's Disease, Tr. Assn. Am. Phys., 1911, xxvi.
Louria, Leon: Brill's Disease, Med. Rec., New York, Aug. 26, 1911.
McCampbell: Observations on Typhus Exanthematicus (Tabardillo) in Mexico, Jour. Med. Research, August, 1910, xxiii, 71.

ABSTRACT OF DISCUSSION

Dr. G. A. Friedman, New York City: I am glad to hear experimental proof of the identity of the so-called Brill's disease and typhus fever. Such evidence, however, is nothing more than a single link, and we must not lose sight of the clinical picture in our enthusiasm over experimental findings. The clinical picture of Brill's disease is the clinical picture of typhus, as I have seen it in Russia, in three epidemics and in many sporadic cases. It is a typhus of a modern American city, and a modern American hospital. Ever since

6. Nicolle, C., Comte, C., and Conseil, E.: Transmission experimentale du typhus exanthématique par le pou de corps, Compt. rend. Acad. d. sc., Sept. 9, 1909, p. 486.
7. Wilder, R. M.: The Problem of Transmission in Typhus Fever, Jour. Infect. Dis., July, 1911, p. 9.
8. Goldberger, J., and Anderson, J. F.: The Transmission of Typhus Fever, with Special Reference to Transmission by the Head-Louse (*Pediculus capitis*), Pub. Health. Rep., Washington, March 1, 1912; Studies on the Virus of Typhus, ibid., May 31, 1912.
9. Brill, N. E.: Pathologic and Experimental Data Derived from a Further Study of an Acute Infectious Disease of Unknown Origin, Am. Jour. Med. Sc., August, 1911.

the first time I heard Dr. Brill, over two years ago, I have believed this disease in New York to be nothing more than typhus fever. My paper, read before the Academy of Medicine in New York, in 1911, and published in the *Archives of Internal Medicine*, showed that typhus fever had lost much of its virulence; that it was constantly present in many communities; that it is not easily communicable under good hygienic and sanitary conditions; and that where sporadic cases are present, an epidemic may at any time break out; that in New York City and all over this country, cases of typhus must have been constantly present, but not recognized; and that the mortality among certain races may be a little over 5 per cent. I always thought that to admit that typhus fever is as dreadful now as it was considered by the masters of medicine in their time would be to reflect on the science of medicine; it is equivalent to admitting that our modern hygiene and sanitation have been of no use.

Drs. Anderson and Goldberger did not obtain a rash in their monkeys; but this is of no importance. When one has seen many cases of typhus one will note that the rash is frequently absent, especially in children. A few weeks ago, through the kindness of Dr. Bullowa, I saw three typhus patients in one family—a father and two children. The father had a pronounced maculopapular rash. The older child had a rash, but not so pronounced; and the younger child had no rash at all. Yet all had typhus fever.

It has been asked why Mt. Sinai Hospital sees cases mostly in summer. Epidemics of typhus are usually at an end before summer. In the winter, cases of typhus are taken for influenza, because accompanied by coryza and bronchitis, and to the layman this diagnosis seems very plausible. But in the summer, it is entirely different. When the physician makes such a diagnosis, the people do not agree with him, for they do not believe in influenza in summer, and are alarmed. Therefore, they send the patient to the hospital; and the physician himself probably wavers a little about his diagnosis of influenza.

DR. V. C. VAUGHAN, Ann Arbor, Mich.: I think that Dr. Goldberger stated that Cole had said that the temperature was in direct proportion to the amount of blood injected, but that he had proved otherwise. That is an interesting point. You can inject the whites of three eggs into a rabbit, and get no elevation of temperature. I have done that every two hours for six weeks, and failed to get a rise of temperature. If, however, you inject one-twentieth of a drop of a dilution of egg-white with an equal portion of salt-solution, you can get a fever. There is a relation between the amount of protein material going into the animal and the height of the fever. The explanation of this, I do not know. I have a theory, but it is not satisfactory; and that is, that the fever results from the cleavage of the protein. The rapidity of cleavage is due to the surface exposure of the protein that is injected. If you inject a large amount of any protein into an animal, you get no fever; but a small amount causes fever. When a large amount is injected, it disappears from the blood in a very short time. We can demonstrate this by taking some blood from the heart of an animal and injecting it into the guinea-pig, sensitizing it against that protein. It is a very interesting thing, but I do not understand it.

Another very interesting thing is the following: You can take an animal and give it a sudden lethal dose of the protein poison, and get all the symptoms characteristic of that poison; yet, while the animal is suffering from this dose, you can give it two or three times a fatal dose, and it will not kill him. There seems to be a point beyond which the effect will not go, unless it is given at one dose. One man at work on that subject says that this is an evidence that the protein poison is not a chemical poison, because no chemical poison would act in that way; but I find that Gebbert, working with hydrocyanic acid, forty years ago, found that if he gave a non-poisonous dose to an animal, he could give it, while suffering from the first dose, enough to kill it, and it would not prove fatal. These things I cannot explain altogether, but they are undoubtedly facts.

DR. J. GOLDBERGER, Washington, D. C.: The length of time that the virus will live in the louse has not been determined. The epidemiologic points raised by Dr. Brill, pointing to differences between these diseases, are such points as arise in connection with other diseases as these are more thoroughly and carefully studied. We have learned, in recent times, that a disease of the classical type is not the only type of the disease that exists. Yellow fever, for example, is not, as we used to think and as many still believe, exactly synonymous with black vomit and a funeral. The classical conception of typhoid is certainly very different from many of the cases that clinicians now recognize, and the same thing may be said of almost every infectious disease with which we are acquainted. It is true of typhus; and the only reason that it has not been recognized is that the American profession labors under the delusion that the disease does not exist in the United States. There is no doubt that it does; and, sooner or later, we may be brought to a sharp realization of the fact by an epidemic outbreak.

IMMUNITY AND SPECIFIC THERAPY IN EXPERIMENTAL CANCER*

ISAAC LEVIN, M.D.

NEW YORK

An important biologic phenomenon is presented by the immunity or resistance of certain animals to the growth of transplantable tumors of white rats and mice. It may be helpful in establishing rational methods for treating human cancer if the assumption is correct that there undoubtedly exists as complete an analogy between human cancer and the tumors in these animals as the analogy between other human diseases and those that can be reproduced artificially in lower animals.

In a recent publication von Hansemann[1] has again cast doubt on the analogy between human cancer and the inoculable tumors of white rats and mice, and declared that the latter are a great deal more benign in their course than human cancer. This assertion, while uttered by a man of great authority, does not coincide with the facts ascertained by a great deal of painstaking and careful experimental study. The spontaneous tumors which occur in these animals give rise to metastasis in 20 to 38 per cent. of the animals; they recur after an apparently radical operative removal and kill the animal in about six weeks after the tumor has come under observation. Consequently the spontaneous tumors of white rats and mice are truly malignant in their clinical behavior, and morphologically also they are similar in every respect to human malignant tumors.

The tumors which are reproduced artificially in these animals by the usual method of subcutaneous inoculation seem to be more benign in their character than the spontaneous tumors and consequently also the human cancer. The tumors inoculated subcutaneously are circumscribed, encapsulated growths; they do not recur on removal, do not invade the surrounding tissue and seldom form metastases. In a recent investigation[2] I have shown that these apparent differences between spontaneous and inoculated tumors of the animals are due to the technic employed in inoculation. Various tumors were inoculated into different organs, including the brain, kidney, liver, spleen and testicle. Tumors thus induced artificially showed all the characteristics of

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* Read in the Section on Pathology and Physiology of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

* From the Department of Pathology, College of Physicians and Surgeons, Columbia University. Work conducted at the expense of the George Crocker Special Research Fund.

1. Von Hansemann: Berl. klin. Wchnschr., 1912, xxix, 223.
2. Levin, I.: Jour. Exper. Med., 1912, xvi, No. 2.

malignancy described in human cancer. The tumor cells infiltrate diffusely and replace the substance of the organ. Consequently symptoms of clinical malignancy must occur as soon as a sufficient amount of a vital organ has been replaced by the tumor. These animals do not live any longer than about ten weeks after the inoculation and frequently die with much smaller tumors than are obtained on a subcutaneous inoculation. Metastases form with much greater frequency than after a subcutaneous inoculation and the tumors recur after an apparently complete operative removal. Thus tumors of white rats and mice inoculated into organs, as well as spontaneous tumors, are identical in their biologic behavior with the malignant tumors of man; and in elucidating human cancer, results obtained in the experimental study on animal tumors may be used with the same caution that is required in all other subjects of experimental medicine

IMMUNITY AS TO INOCULATED TUMORS

It was stated above that the most important phenomenon observed in the course of these studies is the immunity of certain animals to the growth of an inoculated tumor. The mechanism of this immunity differs in many respects from the immunity of an organism against bacterial diseases, though it resembles somewhat the active immunity induced by vaccination. No irrefutable evidence is brought forward to indicate that a passive immunity may be induced by treatment of a normal animal with the blood-serum of an immune. The further fact that unimpaired living tissue seemed to have been required to immunize an animal against tumor growth and that there is no specific relationship between the character of the tissues used for immunization and the tumors used for subsequent inoculation was the cause of the prevailing idea that immunity in experimental cancer is due to a purely cellular activity of the organism of the host.

The most popular theory of cancer immunity is the one advanced by Ehrlich[3] under the name of "athrepsia," which is based on the following considerations: Growth of inoculated cancer is due to cellular activity and indicates that the tumor cells possess a great avidity for a certain specific foodstuff within the organism of the host and consequently obtain it from the normal tissue cells of the organism. When cancer fails to grow, then either the organism of the host does not possess the necessary specific foodstuff or else the avidity of the cancer for this food is not strong enough to deprive the normal tissue cells of it. When the organism of the host is immunized by treatment with a cell emulsion, these cells bind the specific food and consequently the cancer cells inoculated subsequently do not find the necessary nourishment, and die.

Bashford[4] in his conception of immunity in experimental cancer, also considers it to be a kind of cellular activity and furthermore denies that there is any direct influence of the organism of the host on the inoculated cancer cells. According to his idea, an inoculated piece of cancer tissue causes in the new host the formation of a specific connective tissue and vascular scaffolding. This connective-tissue stroma surrounds the graft and furnishes it with the mechanical support and nutrition necessary for its development. Immunity, then, consists in the failure of the organism of the host to supply the specific stroma reaction. The immune organism does not produce a direct deleterious effect on the cells of the inoculated cancer, but alters its own normal connective-tissue cells so as to render them insusceptible to the chemotactic properties of the inoculated cancer cells. Other investigators, including Borrel,[5] incline to accept the view that the immunity in experimental cancer is analogous to the immunity in bacterial diseases and is caused by certain cytolytic antibodies circulating in the blood.

I have investigated the subject of immunity from various standpoints.[6] In the first place, these investigations have shown that it is possible to immunize an animal against a subsequent tumor inoculation not only by a previous injection of an emulsion of living cells but also by one of autolyzed tissue; i. e., of tissue in which the cells have suffered dissolution but in which the endocellular ferments apparently remain active. This fact militates against the supposition that immunity in experimental cancer is due to a peculiar cellular activity. This immunity is probably due to action of ferments and hence is analogous to bacterial immunity. In the same investigation it was also indicated clearly that the result of tumor implantation is determined by two separate factors: first, by the implantability of the ingrafted tumor; and, second, by the rapidity and rate of its growth if ingrafted.

In collaboration with M. J. Sittenfield,[7] I have shown that athrepsia may serve to explain solely the condition of the resistance and susceptibility of an animal to the grafting of tumor tissue, and that the success of such grafting of the inoculated cells may depend on conditions of nutrition. On the other hand, the differences in nutrition cannot explain the reason why in one successful tumor graft there forms a small nodule which is subsequently absorbed, while in another the nodule grows into a large tumor and kills the animal. The latter phenomenon can be explained only by an active inhibitory influence exerted on the cancer cells by the organism of the host.

Further studies of mine[8] have shown that Bashford's theory of a specific connective-tissue scaffolding has no general application in the explanation of cancer immunity. The condition appears to be quite different when the tumor is inoculated into an organ instead of subcutaneously. When a piece of tissue is inoculated into an organ, the first visible step is not the formation of a surrounding connective-tissue stroma. The inoculated cells immediately begin to proliferate and invade diffusely the normal tissue. On the other hand, in an immune animal[9] the tumor inoculated into an organ does not grow but dies and is surrounded by an extensive connective-tissue stroma like any other dead foreign body. Consequently the immune organism does not lack the capacity to form connective-tissue scaffolding but actively inhibits the proliferation of the cells of the implanted piece of tumor.

In a recent investigation[10] on the so-called "precancerous state" I have gained another striking proof that the condition of immunity in animal cancer is not due to exhaustion of nutrition but to an active inhibitory influence of the organ cells on the tumor cells. It appears that immunity in experimental cancer is not always a general condition of the whole organism but

3. Ehrlich, P.: Arb. a.d.k. Inst. f. exper. Therap. zu Frankfurt, 1906, No. 1, p. 77.
4. Bashford, Murray and Cramer, T.: Scientific Reports of the Imperial Cancer Research Fund, 1908, No. 3, p. 315.
5. Borrel: Bull. de l'Inst. Pasteur, 1907, v, 207.
6. Levin, I.: Proc. Soc. Exp. Biol. and Med., 1910, vii, 64; Jour. Exper. Med., 1910, xii, 594.
7. Levin, I. and Sittenfield, M. J.: Jour. Exper. Med., 1911, xiii, 511.
8. Levin, I.: Jour. Exper. Med., 1911, xiii, 604.
9. Levin, I.: Jour. Exper. Med., 1911, xiv, 139.
10. Levin, I.: Jour Exper. Med., 1912, xv, 163.

may also be localized in one organ. I found that Flexner-Jobling carcinoma of the white rat, which grows readily on a subcutaneous inoculation, does not grow when inoculated into a normal testicle. This resistant testicle may be rendered susceptible to the growth of the tumor by treatment with scarlet R oil or ether. These substances impair the normal functions and consequently the inhibitory action of the parenchymatous cells on the cancer cells. This purely local treatment of the organ cannot diminish the amount of the specific food which the inoculated cancer cells may find in the organism of the host.

Thus the mechanism of immunity in experimental cancer consists most probably in an active inhibitory influence of the normal organ tissue on the cancer cells and is analogous to immunity in bacterial disease. But the conditions are by no means identical and new methods will have to be devised in order to discover the presence of antibodies in the organism and to determine its nature.

The malignant tumors of white rats and mice are analogous, as stated above, to human cancer and it seems feasible to suppose *a priori* that similar conditions of resistance may exist in man. It is difficult to ascertain the matter in view of the chronic course of the disease, but rare cases of spontaneous cure in human cancer reported by Orth[11] and others, and my investigations[12] on the heredity in human cancer make it probable that a condition similar to an immunity may exist in human cancer.

SPECIFIC THERAPY

The great practical significance of the phenomenon of immunity in experimental cancer is due to the fact that there exists a direct relationship between immunity and specific therapy of a disease. Ehrlich was the first to indicate this relationship and to create a new science of experimental specific therapy. The action of antitoxin shows clearly this relationship. Blood-serum which is capable of passively immunizing a healthy organism will at the same time cure a diseased organism. Such specific serotherapy is as impossible to obtain in experimental cancer by present methods as to show the existence of antibodies in the blood-serum of a tumor-bearing animal.

Better success followed the treatment with substances containing free enzymes. I stated above that I have succeeded in immunizing animals against cancer growth by injection of autolyzed tissue. Blumenthal[13] and Carl Lewin[14] have reported successful treatment of cancer in rats with injection of autolyzed tissue. I have been quite as successful with the same method of treatment. The following is a short summary of the experiments:

Sarcoma tissue of a white rat was removed under aseptic precautions and autolyzed for three days. The fluid was then filtered and injected subcutaneously into rats with a large growth of the same sarcoma. Twenty-four hours after the injection the removed tumor showed a severe hyperemia with numerous hemorrhages in the parenchyma. Subsequently many of the tumors liquefied and either sloughed off or became absorbed. But at present the results of this specific ferment therapy, if this term may be used, are as yet unsatisfactory. The true nature of the therapeutic action of the substances is not known. The same autolyzed tissue may be active in one series of experiments and not in another. All my attempts to obtain the same results with treatment of sarcoma of the white mouse with autolyzed mouse sarcoma failed.

11. Orth: Ztschr. f. Krebsforsch., 1904, i, 309.
12. Levin, I.: Ztschr. f. Krebsforsch., 1912, xi.
13. Blumenthal: Med. Klin., 1910, vi, 1982.
14. Lewin, Carl: Ztschr. f. Krebsforsch., 1912, xi.

CHEMOTHERAPY

The greatest discovery of Ehrlich in the whole field of specific therapy is the finding of a mechanism of the specific therapeutic action of certain chemicals. It was known empirically long before that certain drugs have a specific action against a disease, as for instance quinin in malaria or mercury in syphilis. Ehrlich noticed that in certain infectious diseases, mainly in those caused by such animal parasites as trypanosomes or spirilla, it was extremely difficult to produce an active immunity, and consequently the formation of a passively immunizing and curative serum. It occurred to him then to try to obtain a chemical which would have a specific action on the parasites and consequently be a true curative agent against the disease. Ehrlich[15] was led to the idea by the results of his previous studies on vital staining.

These investigations have shown that certain dyes when introduced into a living organism may stain one group of cells or organ and leave the other organs unaffected, as for instance, methylene-blue, which stains only the central nervous system. Another dye closely related chemically to the first may lack the same specific effect on the same organ. Ehrlich arrived at the view that specific action of chemical substances depended on three factors: (1) the chemical constitution of the substance; (2) its pharmacodynamic action; and (3) its specific distribution in the different tissues of the organism. *A priori* it seemed further possible that chemicals might be found which might be toxic for parasites and not toxic for the body cells, and thus a specific therapeutic measure might be found against the disease caused by the parasites. The theoretic deductions of Ehrlich proved to be correct and the brilliant discovery of salvarsan and of a new science of chemotherapy followed.

Since both serotherapy and ferment therapy have been of comparatively little value in the treatment of cancer, it is natural to expect that chemotherapy will be tried. Indeed, recently von Hansemann[16] reported on a series of experiments in which he succeeded in curing tumor in mice with intravenous injection of a chemical combination of selenium and eosin. Von Wassermann asserts that the action of both substances is needed for the success of the treatment. Selenium in accordance with his ideas is toxic for all animal cells, while eosin is not toxic but has a selective action on the tumor cells. It enters the tumor and acts as a carrier transporting with it the selenium to the tumor cells. He further states that the same chemical combination of the two substances may be active in one series of experiments and inactive in another due to the biologic differences of the combination. It is also apparently difficult to differentiate between the curative dose and the dose which is toxic to the animal, as many animals died immediately after the injection.

The main difficulty in the selection of a correct chemotherapeutic agent, as stated by Ehrlich, consists in the fact that no chemical is strictly specific as an antitoxin, for instance. It is always both organotropic and parasitotropic; i. e., it affects to a certain extent always both the parasites and the body tissue. The difference between a cancer cell and a normal body cell is much less than between a trypanosome and a body cell; consequently it

15. Ehrlich, P.: Festschr. f. Leyden, 1898, i.
16. Von Wassermann, A. and Von Hansemann, D.: Berl. klin. Wchnschr., 1912, xlix, Nos. 1, 3, 5.

ought to be still more difficult to find a chemical substance which will be strongly toxic for the tumor cells and innocuous for the organ cells.

I am engaged at present in the comparative study of the action of various vital stains on normal rats and mice and on the same species of animals into which tumors were inoculated into parenchymatous organs. Of the different dyes used for the experiments eosin did not appear in my hands to stain selectively the tumors alone, but stains diffusely the whole organism. Furthermore, eosin itself without the addition of selenium appears to be extremely toxic and many animals die immediately or in a couple of hours after the intravenous injections of the eosin. Nagelschmidt[17] also reported recently the fact that eosin is extremely toxic unless the precaution is taken of putting the animal in a dark room immediately after the injection.

Trypanblau, isaminblau and pyrrolblau have had extensive use recently for vital staining. These dyes have a selective action on certain cells. It is not necessary to enter here into the details of the subject. The following fact is of interest for the present discussion. In the liver of a normal animal these dyes stain the so-called Kupffer's cells. If a sarcoma is inoculated into the liver a great deal of the vital stain is found in the cells of the tumor. But not all the cells of the sarcoma take the stain and furthermore Kupffer's cells are stained as strongly as in a normal animal. It would seem probable, then, that the dyes used for vital staining will not be of great aid in the chemotherapy of cancer. Recently C. E. Walker[18] reported on experiments with treatment of tumors with different combinations of selenium and eosin with completely negative results.

None the less, negative results of one investigator cannot completely contradict the positive results of another, and von Wassermann's results seem to be the most successful of all those reported. The presence of immunity in the tumor animals makes it quite certain that ultimately a specific method of treatment in experimental cancer will be found. But it is impossible to predict whether the methods of chemotherapy, serotherapy or ferment therapy will be the most fruitful of results.

Chemotherapy, as stated above, is not the ideal specific method of treatment but seems the most promising of results at present. It is difficult to predict the chemical nature of the most successful drug of the future, though I believe that one does not need to search for a substance absolutely fatal to the life of the tumor cells. The end may be achieved when a substance is found that will possess the power to arrest the active proliferation of the tumor cells. I am at present engaged in work in that direction.

129 West One Hundred and Twenty-Second Street.

17. Nagelschmidt: Berl. klin. Wchnschr., 1912, xlix, 118.
18. Walker, C. E.: Lancet, London, 1912, clxxxii, 1337.

ABSTRACT OF DISCUSSION

Dr. William Salant, Washington, D. C.: What was the duration of the immunity which Dr. Levin induced by means of autolyzed tissue? A cure for cancer or for any other disease by means of a specific which is not toxic is, I believe, hopeless, since any substance when given in sufficient amount may exert a harmful effect.

Dr. G. W. McConnell, Philadelphia: It seems to me that immunity in cancer tumors is one of the most difficult propositions, inasmuch as we know that it may also be given to white mice, yet mice from different parts of the country will react differently to the same tumor. This winter, for example, in some tumor work in mice, I found, in a series of twenty mice, that only 3 per cent. showed a growth when inoculated with one kind of tumor, but when inoculated with a different form, they gave a percentage of 20.

I think that it is quite well understood that certain organs of the body have a distinct organ immunity. The spleen, for instance, is seldom the seat of primary tumors, and also quite rarely the seat of secondary ones. Metastasis from these tumors does not occur very frequently. Nevertheless, if the original growth is removed, we are more likely to get secondary tumors in other parts of the body following the original subcutaneous inoculation.

Dr. V. C. Vaughan, Ann Arbor, Mich.: It seems to me that the ferment idea is the most reasonable one at present. Of course, there is nothing in sight as yet; but the fact that you can induce immunity by autolyzed tumors, it seems to me, indicates (I will not say proves, because it does not prove) a ferment action; and the autolyzation is simply a change in the physical condition of the cancer protein. When autolyzed, it is soluble, and, therefore, more readily acted on by the ferments of the body. This, of course, is all hypothesis. Everything that we say about it is theoretical, as yet, but it is by means of hypotheses that we are ultimately enabled to do things. To say that the autolyzed cancer tissue, being soluble, is more readily acted on and calls out ferments that destroy that cancer tissue seems reasonable. It is undoubtedly true that there are two kinds of proteolytic ferments that the cells of the body are capable of forming, one of which may be called a general proteolytic ferment, and the other specific proteolytic ferment. Ferments have been extracted from the leukocytes and there is no doubt of their existence. This much of it is not hypothesis. The only question is about the possibility of developing in the body enough of a proteolytic ferment to destroy the cancer tissue without, in this distruction, liberating sufficient poison to be fatal.

Dr. J. W. Vaughan, Detroit, Mich.: Dr. Levin said that he had a serum which he obtained from one animal injected with rat sarcoma which possessed a ferment that would split up the cancer cells in other animals with the same tumor. I should like to ask how long after the injection of the cancer tissue into the animal that serum was obtained. We are accustomed to consider a ferment as a stable product. For example, we look on the use of vaccine in small-pox as such, persons retaining immunity over several years. In the majority of cases of typhoid fever, the patients retain their immunity for a long time also. In cancer, a ferment is formed that is stable only for from six to ten hours. After that, it may be stored in small quantities in some other tissue of the body, but it is not active in the serum or the blood-cell.

Dr. Leo Loeb, St. Louis: Experiments carried out in our laboratory proved that while the fowl spleen had a very active immunizing power against mouse carcinoma, the autolyzed spleen no longer had such an immunizing effect.

Dr. Isaac Levin, New York: In reply to Dr. Salant, I could not ascertain the duration of the immunity induced by treatment with autolyzed tissue. In order to prove that the animals are immune a piece of tumor is inoculated, which becomes absorbed. Thus the animals are rendered immune doubly, by the treatment with autolyzed tissue and through the inoculation of tumor. The latter immunity caused by an unsuccessful inoculation of tumor remains active all through the life of the animal and obscures the effect of the treatment with autolyzed tissue. No chemotherapeutic measure can be found which is toxic for a parasite and completely innocuous for the organ cells. Still more difficult would it be to find a chemical substance which will be toxic to the cancer cells and will not injure the organ cells. I stated, therefore, that in my opinion chemotherapy is not the ideal method of treatment in cancer, but for lack of better methods the research on lines of chemotherapy must continue. In my own investigations I am searching for a substance which will be toxic neither to the organ cells nor to the cancer cells, but will arrest the proliferating power of the latter. Such a substance would act in a manner antagonistic to those sub-

stances which, as Jacques Loeb has shown, enhance the proliferating power of the cell. While it is self-evident that no chemical will be absolutely innocuous to the cells of the organism, a chemical substance may arrest the proliferating power of a cell and not kill it. The influence of the racial differences on immunity is neutralized in our work by the great number of animals used. I stated that the question of organ immunity as well as general immunity in human cancer cannot be discussed at present for lack of properly analyzed material, but that my own investigations on eugenics in human cancer seem to indicate that there may exist a condition of resistance or immunity in human cancer. Metastases occur after an inoculation into a parenchymatous organ of tumors which do not metastasize on a subcutaneous inoculation. It is my personal belief that ferment activity underlies the condition of susceptibility as well as immunity in cancer. But at present the knowledge of the chemical nature of the ferments is so limited that it is impossible to ascertain their true functional significance.

FOUR CASES OF TYPHUS FEVER (BRILL'S DISEASE) IN ONE FAMILY

WITH SUCCESSFUL INOCULATION INTO GUINEA-PIGS AND MONKEY *

MATTHIAS NICOLL, JR., M.D.
CHARLES KRUMWIEDE, JR., M.D.
JOSEPHINE S. PRATT, A.B., AND
JESSE G. M. BULLOWA, M.D.
NEW YORK

The recent work of Anderson and Goldberger of the Hygienic Laboratory at Washington establishing, experimentally, the identity of typhus fever and so-called Brill's disease, together with the mode of transmission of typhus fever by body-lice as shown by these writers, and Nicolle and his co-workers abroad, and by head-lice as lately shown by Anderson and Goldberger, greatly increase the interest in cases of what we must now regard as endemic typhus fever, so well studied by Drs. Brill, Louria and others as it occurs in this country and especially in New York City.

For many months before the occurrence of those reported, no cases of typhus fever had occurred in New York to the best of our knowledge. Those that we present are unique in the history of the endemic form of the disease as it has been studied in New York, in that they affected four members of one family, and that two of them were young children. These cases, furthermore, represent types of the disease varying from the comparatively mild, to an example of typhus fever such as is commonly seen in epidemics, thus giving, as it were, a clinical demonstration of the identity of the endemic (Brill's) and epidemic form. But one member of this family escaped the disease, a child of 1½ years of age.

A careful investigation of the premises (a large tenement house) in which these cases occurred failed to reveal the occurrence of any other cases previously, and an extensive inquiry among physicians and hospitals has brought to light but three additional cases of the disease up to the present time.

The patients were typical east-side residents, Russian Hebrews of the poorer class. They had been in the country for about eight months.

REPORTS OF CASES

CASE 1.—Ida K., aged 28, (Chart 1), the mother, was admitted to the Har Moriah Hospital, April 9, 1912, with a temperature of 105 F. She had previously been healthy and there was nothing in her past history to throw any light on her present condition. About six days before admission she had a severe chill followed by fever, sweating and intense headache. She was obliged to take to her bed. Four days before admission she vomited some bilious material. These symptoms continued, together with a profuse watery diarrhea, up to the time of her entrance to the hospital. On admission the patient's condition was fairly favorable; a few hemorrhagic spots were noted on the abdomen. The general physical examination, together with two Widal tests, proved negative. On April 10, the leukocytes were 12,600 per c.mm. of which 66 per cent. were polynuclears. A second count on April 13, showed 11,200 leukocytes and 64 per cent. polynuclears. The case was regarded as one of intestinal toxemia, the true cause not being suspected until after the entrance to the same hospital of other members of the family.

* From Research Laboratory, Department of Health, New York.

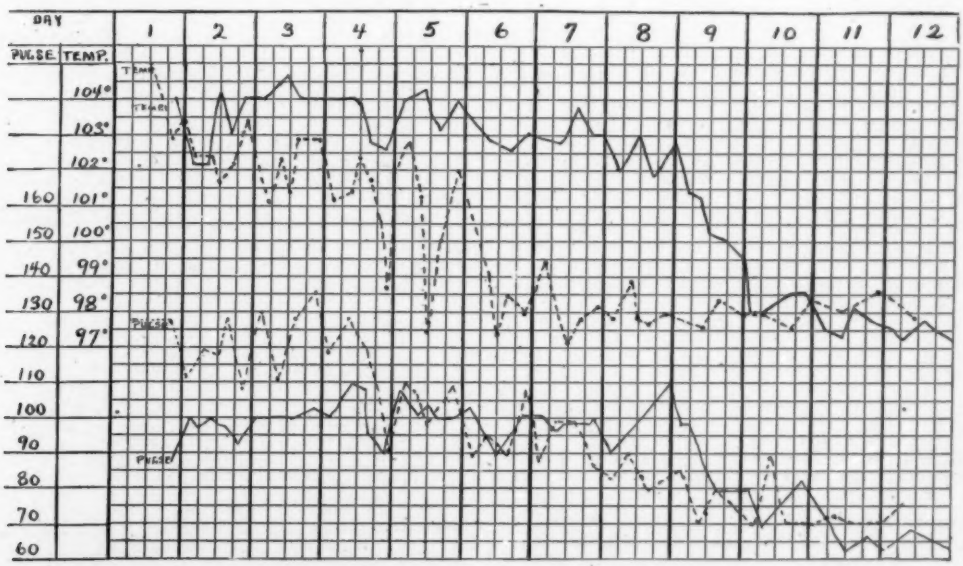

Chart 1.—Pulse and temperature in cases of Israel K. (solid line) and Ida K. (line composed of dashes).

CASE 2.—Israel K. (Chart 1), the husband of Ida K., was admitted to the hospital, May 4. There was nothing in his personal history of importance except that the patient had suffered for some ten years with a functional gastric condition, but had otherwise been in good health. He used alcohol moderately and was a heavy smoker. Six days before admission to the hospital he went to bed feeling very ill with severe frontal headache and fever. He had a slight cough. He was treated symptomatically by a private physician until his admission to the hospital where he was seen by two of us three days later and showed the following picture: The entire body from the neck down was covered with a discrete, somewhat morbilliform type of eruption, which included also the palms of the hands. The lesions were fairly widely separated, much more so than in measles, were of bluish-red color, and disappeared on deep pressure. The throat was intensely red, the head somewhat retracted, the neck stiff, and Kernig's and Babinski's signs were marked. The patient's picture was that of typical coma-vigil, the eyes wide open and staring. There was no resistance or evidence of pain caused by taking blood from the arm for purposes of inoculation. The heavy beard, axillæ, scalp and chest were full of lice. Blood-count, May 5, showed 17,000 leukocytes of which 84 per cent. were polynucleated; May 7, 16,000 leukocytes, 80 per cent. polynuclears. The patient was transferred to Willard Parker Hospital, May 11. A physical examination at this time showed the eruption still present with the addition of some petechiæ. The throat was moderately congested, the tongue dry and covered with sordes, as were also the teeth; the conjunctivæ were injected. The patient was emaciated. The lungs showed the presence of bronchitis of moderate extent; the liver was normal, the spleen enlarged and tender, the urine negative. May 12, the patient still coughed and the pulse was very weak. May 15, the patient had greatly improved with the fall of temperature; the rash was still visible and the pulse occasionally weak. Apart from a rather long-continued subnormal temperature his recovery was uneventful. Three Widals proved negative and the stools showed no typhoid bacilli.

CASE 3.—Harry K. (Chart 2), aged 8 years, was admitted to the same hospital, May 8, having been taken ill three days previously with headache, fever and vomiting. The blood-count, May 8, showed 16,400 leukocytes, 82 per cent. polynuclears. Seen on the second day after admission, the patient did not seem particularly ill; there was a maculopapular rash over the body and extremities, the number of lesions being few and widely scattered. They were of the same general type as those seen on the father but much less marked. A physical examination on the day of his transfer to the Willard Parker Hospital, May 11, showed a fairly well-developed child with hair full of vermin, flushed face and somewhat apathetic. The rash was still present but fading. The lungs, heart and liver were negative, the spleen was enlarged and somewhat tender. An examination of the spinal fluid gave the following results: 23 c.c. clear fluid, pressure considerably increased. Cytology: no cellular elements—coarse shreds of fibrin. There were no bacteria in either smear or culture. Albumin ++. Globulin +. The progress of this case was uneventful to recovery. The pulse after the fall in temperature was frequently quite weak and irregular. The patient had a slight cough for a few days.

CASE 4.—Lena K. (Chart 2), aged 10, was admitted to the hospital on the same day as her brother, having been taken ill four days previously with headache, fever and loss of appetite. A blood examination showed: the leukocytes 12,400, polynuclears 76 per cent. When seen on the day following admission the patient looked very ill, frequently groaning as though in pain and with irritability alternating with apathy. Her condition markedly resembled typhoid fever at its height. Her headache was intense, and the rash was similar in appearance and extent to that of her brother. A physical examination, May 15, showed no abnormality other than a somewhat enlarged and tender spleen. The rash was fading and the patient had a slight cough. It was noted that her head was full of vermin. She made an uneventful recovery without other symptoms than those which usually accompany an infectious fever. Examination of the spinal fluid gave the following results: 8 c.c. of bloody fluid under very light pressure. Cytology: many red blood-cells, few leukocytes and polymorphonuclears; also brown crystals. There were no bacteria in either smear or culture. Albumin +. Globulin +.

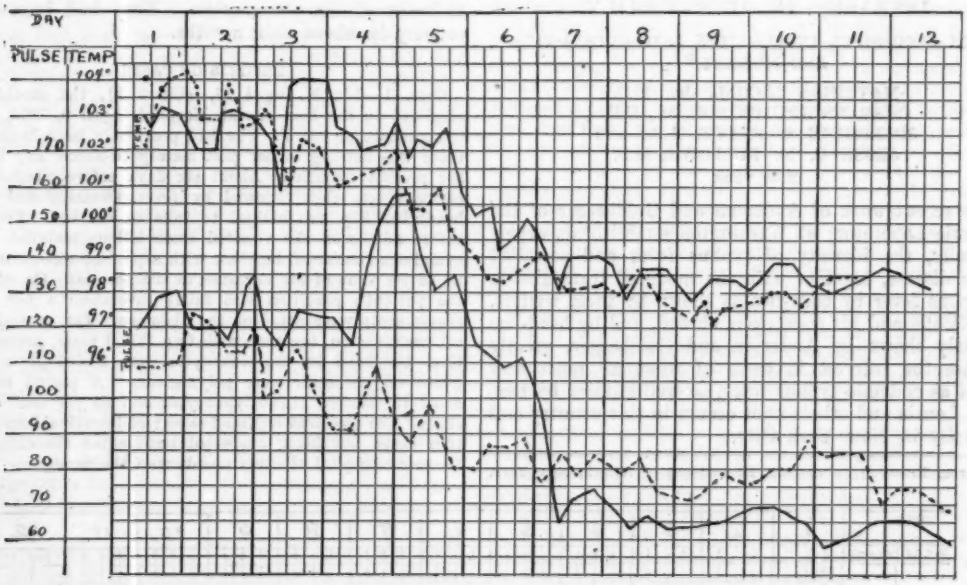

Chart 2.—Pulse and temperature in cases of Harry K. (solid line) and Lena K. (line composed of dashes).

The blood examination of these patients gave the results noted in the histories. In the father and two children the polymorphonuclear leukocytes showed the

inclusion bodies described by Döhle and others as occurring in scarlet fever and other diseases. The mother's blood was not examined for this condition. The treatment was purely symptomatic. Measures against the spread of this disease to physicians and nurses consisted in shaving the hair and the free use of parasiticides; the clothes were disinfected by steam.

We believe that there can be no reasonable doubt that these four patients were infected with the same virus, that of typhus fever.

RESULTS OF INOCULATIONS

Israel K.: Blood was drawn May 9, and 2 c.c. directly injected intraperitoneally into Guinea-Pigs 462 and 468 at the bedside. The remaining 4 c.c. were partially defibrinated. At the laboratory the clot was broken up in citrate solution and this added to the defibrinated blood and injected into Monkey A. This monkey at the same time received 1 c.c of citrated blood from the next patient, Lena K.

Result: Monkey A. On the eleventh day the temperature rose to between 104 and 105 F. for twenty-four hours. This may or may not have been an abortive reaction, which, however, could be proved only by showing that the monkey is or is not immune.

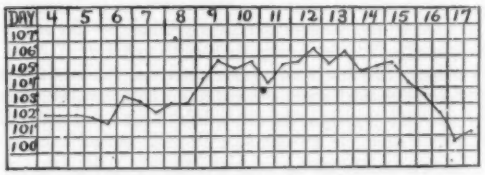

Chart 3.—Temperature of Monkey E.

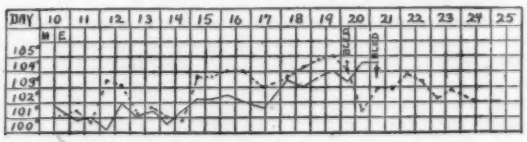

Chart 4.—Temperature of Guinea-Pigs 462 (solid line) and 468 (line of dashes).

Guinea-Pig 462: Positive. There was a definite rising temperature from the fifteenth to the twenty-first day when the animal died as a result of bleeding from the heart.

Guinea-Pig 468: Positive. Except for a transient rise on the twelfth day there was a definite rise starting on the fifteenth day.

Although the inoculation of Monkey A was apparently negative, the results in the guinea-pigs must be considered positive as evidenced by the reaction of the monkey inoculated with their blood.

Monkey E, inoculated with blood from Guinea-Pigs 462 and 468. A chart of the temperature showed a typical typhus temperature curve. Examination of blood-smears on the twelfth day showed the presence of the same inclusion bodies in the leukocytes as were found in the clinical cases.

Lena K.: May 9, 1912, 1 c.c. of citrated blood was injected into Monkey A, as already mentioned. On the next day, May 10, 10 c.c. of defibrinated blood was obtained and injected into Monkey B. May 11, 3 c.c. of cerebrospinal fluid was injected into Guinea-Pig 437.

Results: All the animals were negative.

Harry K.: May 11, 3 c.c. of cerebrospinal fluid was injected into Guinea-Pig 423.

Results: Negative.

One case, therefore, that of Israel K., gave positive, results in two guinea-pigs whose blood, injected into a monkey, caused a typical typhus temperature reaction. This, then, is a verification of the inoculability of so-called "Brill's disease" or endemic typhus into monkeys. It also shows that it is possible to infect guinea-pigs directly with this disease. This, as far as we know, is the first time that the endemic type of typhus as it occurs in New York has been directly transmitted to guinea-pigs, and is an additional point of similarity to the epidemic type as it occurs elsewhere.

The negative results following the inoculation of cerebrospinal fluid was to be expected as previous workers have not found it infective.

The negative results of inoculation in the case of Lena K., are probably due to the variation in susceptibility of the animals. The doubtful reaction in Monkey A is attributed to the same cause.

We wish to express our thanks to Dr. Leo Stieglitz, attending physician to the Har Moriah Hospital on whose service the cases occurred, for permission to study and report these cases, and to Dr. H. Steinmetz, the house physician, for his aid.

NOTE.—Since the above was written it has been brought to our attention that Dr. Warren Coleman of New York City reported at a meeting of the Academy of Medicine, Feb. 15, 1910, four cases of so-called Brill's disease in one family. No details were given.

THE PRESERVATION OF TISSUES AND ITS APPLICATIONS IN SURGERY*

ALEXIS CARREL, M.D.
NEW YORK

I. INTRODUCTION

Six years ago, at the Rockefeller Institute, I began to investigate how tissues isolated from the organism could be preserved and used after a few days or weeks as grafts. I wished to find a method by which tissues, extirpated from the amputated limb of a living animal or a fresh cadaver, could be stored during the period which elapses between their extirpation and their transplantation on the patient. It would be very convenient for the surgeon to keep in store pieces of skin, periosteum, bone, cartilage, blood-vessels, peritoneum, omentum and fat, ready to be used.

I attempted to preserve the tissues outside of the organism in a condition of latent or active life.

A tissue is in latent life when its metabolism becomes so slight that it can hardly be detected, and also when its metabolism is completely suspended. Latent life means, therefore, two different conditions — unmanifested actual life and potential life. Unmanifested actual life is a normal stage of the evolution of all organisms, when they progress from general death toward elemental death. As the metabolism is still going on, although very slowly, it is a temporary condition. Sooner or later cadaveric lesions develop which bring about the complete disintegration of the protoplasm. Potential life consists of a suspension of all actual vital processes. The metabolism being suppressed, no cadaveric changes would take place in the protoplasm. Tissues in a condition of potential life could be preserved outside of the body for an indefinite period of time.

Latent life was discovered two centuries ago by Loewenhoeck, who obtained the resurrection of *Milnesium tardigradum*, which had been completely dried for a long time, by moistening it with water. In 1840,

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

* From the Rockefeller Institute for Medical Research.

Doyere also studied the peculiarities of latent life of *Milnesium tardigradum*. He completely dried a few of these animals, heated them at a temperature of 100 C., and, after having humidified them, observed that they lived again. These observations are very important because *Milnesium tardigradum* is highly organized and contains muscular fibers, nerves, nervous ganglia, etc. Paul Bert, in several famous experiments, preserved in latent life the tissues of mammals, and succeeded in transplanting rats' tails, kept for several days in a small quantity of confined air at a temperature not higher than + 12 C. In 1907-08 I transplanted successfully vessels preserved for several days or weeks in cold storage in a condition of unmanifested actual life.

A tissue isolated from the organism can be kept in active life if it is given artificially a normal nutrition. The possibility of the active life of a tissue outside of the organism was demonstrated in 1907 by Harrison, in a series of splendid experiments made in the anatomic laboratory of Johns Hopkins University. Harrison transplanted the central nervous system of frog embryo in a drop of fluid taken from the lymph-sac of an adult frog. He could then observe, during a few days, the growth of the axis cylinders. In 1910, with the collaboration of Dr. Burrows, I observed the growth of tissues of mammals in plasma. In 1912, I found that the permanent active life of the tissues outside of the organism was possible: a piece of a chick's heart pulsated strongly one hundred and four days after its extirpation, and connective tissue was growing actively during the fifth month which followed its extirpation from the organism.

The discovery by Loewenhoeck, Paul Bert and Harrison of these two forms of life—latent life and active life—of the tissues separated from the organism, was of great biologic and philosophic importance, but it did not seem that it would ever be of practical interest. Nevertheless, it appears to-day that the evolution of surgery may lead to the use in human therapeutics of the work of these great biologists.

II. EXPERIMENTS

From 1906 to 1912 several technics were developed in order to keep tissues isolated from the organism in a condition of latent or active life.

These tissues were extirpated from a living animal or from an animal recently killed by chloroform. The death of the whole organism does not bring about immediately elemental death, that is, death of the tissues and organs. Elemental death is a slow process, while general death may occur suddenly. For instance, a man is stabbed through the heart and killed. His personality has disappeared. He is dead in the medicolegal sense of the word. All the organs and tissues which compose the body, however, are still living. If it were possible immediately after death to transplant the tissues and organs which compose this body into other organisms of identical character, no elemental death would occur, and all the constituent parts of the body would continue to live. In this case, general death can be defined as the rupture of the contract of association between the tissues and organs of the organism by failure of one of the partners, the heart. Therefore, general death is merely the starting-point of the disintegrative phenomena which lead to elemental death, that is, destruction of the living matter.

The duration of the period which elapses between general and elemental death varies according to the nature of the tissues. The cerebral substance disintegrates so quickly that, after a few minutes of complete anemia, irreparable lesions take place, while skin, bones and connective tissues can overcome for a long time the cadaveric process. Therefore it was necessary to extirpate, soon after death, such glands as the hypophysis and thyroid, which disintegrate rapidly, while the more resistant tissues, like the skin and arteries, could be removed from the animal a few hours after death. The tissues must be extirpated before the beginning of the cadaveric disintegration. It is well known that elemental death is brought about by microbic and autolytic enzymes. Immediately after general death, the microorganisms from the digestive tract diffuse through the body and their ferments begin to destroy the tissues. At the same time, the autolytic ferments, which are no longer held in check by the serum, contribute also to the disintegration of the organs. This destructive process is increased or retarded by the causes which activate or retard the enzymotic actions, and the multiplication of the microorganisms. For instance, the rate of cadaveric disintegration, which is very rapid at 35 or 40 C., becomes very slow at — 1 or — 2 C. It is, therefore, important immediately to put the cadaver from which the tissues will be used as grafts into cold storage, and to extirpate the tissues under rigid asepsis as soon as possible after death.

The experiments were performed on various tissues: blood-vessels, cartilage, periosteum, skin, spleen, heart, thyroid and hypophysis of adult dogs and of chick fetuses.

A. PRESERVATION OF THE TISSUES IN LATENT LIFE

Experiment 1.—The tissues were deposited in a preservative medium and put in a refrigerator immediately after their removal from the organism.

Several preservative mediums were used: isotonic sodium chlorid solution, Locke's solution, Ringer's solution, defibrinated blood, serum, confined human air, and petrolatum. The vessel or the flaps of skin and periosteum were placed in tubes filled with the medium. Petrolatum and Ringer's solution were chiefly employed. The tubes were sealed or hermetically closed and deposited in a refrigerator, the temperature of which was maintained constantly between —1 C. and +7 C.

The color and consistency of the tissues remained generally normal for several weeks. After six, seven and even ten months the microscopic appearance of the arteries was not markedly modified. The wall was a little softer, and the vessel flattened more readily. A section of a pig's carotid artery, preserved in a sealed tube with a few drops of Locke's solution from April to November, 1908, looked as if it had been extirpated from the animal only a few moments since, and its histologic appearance was entirely normal. While the morphology of the blood-vessels, skin, cartilage, etc., preserved for a few months in cold storage was not modified, glands, such as the thyroid or kidney, showed, after a short time, a marked disintegration.

The appearance of a tissue does not give any indication of its dynamic condition. There is no morphologic difference between a living tissue and a dead tissue. The only method of finding out the condition of a tissue which is supposed to be in latent life is to replace it under its normal physicochemical conditions and to observe whether it will again manifest life.

The condition of the tissues preserved in cold storage was examined by two methods: cultivation and transplantation.

1. Fragments of spleen, skin and heart were extirpated from 15- or 16-day-old chick embryos and preserved in Ringer's solution and in cold storage for one, two and even six days. Afterward they were put in

chicken plasma and in an incubator. They grew luxuriantly. It was then demonstrated that tissues preserved in cold storage were really in a condition of latent life, since they resumed their growth as soon as they were given back their normal physicochemical conditions.

2. In a great many experiments, tissues which had been kept in cold storage from one day to eleven months were transplanted into animals and the results examined from a few days to four years after the operation.

In several experiments, flaps of dog's skin, preserved in petrolatum and in cold storage from one to ten days, were transplanted. Generally the graft took as well as a fresh piece of skin. In one case a fragment of black skin was grafted on a white dog. As the black hair grew from the skin no mistake was possible regarding the condition of the graft during the period of preservation in cold storage.

In a few experiments, pieces of dog's cartilage and periosteum which had been kept in cold storage from twenty-four to twenty-eight hours were transplanted on dogs. It was found that periosteum produced bone and that cartilage remained alive.

In many experiments segments of dog's arteries and veins preserved in cold storage were transplanted on the carotid artery and on the abdominal or thoracic aortas of other dogs. The results were examined from five days to more than four years after the operation. The gross anatomic changes of the vessels were light, but the wall often presented marked histologic lesions. They consisted generally in the partial or complete disappearance of the muscular fibers. The remote results of these operations were excellent. For example, a segment of popliteal artery, extirpated from the leg of a young man and preserved for twenty-four days in cold storage, was transplanted onto the abdominal aorta of a small bitch. The animal lived in excellent health for four years and two months, became pregnant several times, and finally died during labor. The abdominal aorta was normal, but the human arterial segment was slightly dilated, and its wall was composed of connective tissue only.

In another experiment a segment of a dog's jugular vein, preserved for twenty-four hours in cold storage, was transplanted onto the thoracic aorta of a fox terrier. In spite of slight lesions of the cord, due to interruption of the aortic circulation during the operation, the animal remained in excellent health. After two years and two months the dog died of an epidemic disease. The descending aorta was normal and the transplanted segment had about the same caliber as that of the aorta.

The results of these and many other experiments showed that tissues like blood-vessels, skin and connective tissue could be preserved in latent life for two weeks at least. When blood-vessels were kept in cold storage for several months, the results were often excellent, but it was impossible to ascertain whether the original tissue had not been replaced by the tissues of the host.

B. PRESERVATION OF TISSUES IN A CONDITION OF ACTIVE LIFE

Experiment 2.—Tissues cut into thin fragments and placed in a nutritive medium at the temperature of the body can be maintained in a condition of active life. In 1912, I attempted to preserve in that manner hypophysis and periosteum extirpated from dogs living or recently killed by chloroform. The best medium is normal plasma, as was demonstrated by a comparative study of the value of varied artificial and natural mediums made at the Rockefeller Institute by Ragnvald Ingebrigtsen. The plasma was prepared according to the technic of Delezenne and Eordet and Gengou. An oiled glass cannula was introduced into the carotid artery of a dog. The blood was allowed to flow into cold paraffined tubes, which were put in ice and centrifugalized. The plasma was then taken up with paraffined pipets, put into large glass tubes or spread on the surface of the covers of Gabritschewski boxes. The large periosteal flaps were dropped into the tubes, and the small fragments of hypophysis were immerged into the layer of plasma covering the covers of the boxes. Coagulation took place rapidly. Then the tubes and the boxes were sealed and placed in an incubator at a temperature of 38 C.

After a few days it was found that the fragments of hypophysis were living, and that continuous layers or tubular formations of epithelial-like cells had grown from their edges through the culture medium. Around small pieces of periosteum which were cultivated in hanging drops at the same time as the large flaps were deposited in the tubes a new tissue had developed. The growth of the hypophysis stopped after about five or six days, and that of the periosteum after nine or ten days. In order to preserve these tissues for a longer time it would have been necessary to wash and transplant them into a new medium.

Transplantation of the periosteum preserved in active life was made after one, two and three days. The periosteal flaps were removed from the plasma and washed in Ringer's solution. Afterward, they were placed under the skin of the chest of a dog. Periosteal flaps preserved in Ringer's solution were used as controls. The results were examined after about one month. It was found that more bone was produced by the flaps preserved in plasma than by the controls.

It is possible that a tissue, like periosteum, cartilage or skin, would grow better after having been preserved in active life than after having been kept in cold storage. Glandular tissues, like hypophysis or thyroid glands, which were not preserved successfully in cold storage, could live actively for five days at least in Gabritschewski boxes. Nevertheless, while the preservation of a tissue in active life is better than in latent life, it is also very much less safe.

The technic is more complicated and the danger of infection very much greater. The more active the metabolism of a tissue, the more sensitive are the cells to external influences. Therefore, for the preservation of tissues used at present in human surgery, the cold-storage method is simpler and more practical and must be used.

III. CLINICAL APPLICATION

It is known that flaps of human skin preserved for some time at a low temperature have already been used in human surgery. Nevertheless, the first systematic application of the preservation of tissues in latent life was made by Dr. Tuffier. In 1910 and 1911 he preserved in petrolatum and in a refrigerator pieces of fat, bone, cartilage and peritoneum which he had extirpated from amputated limbs. He also used lipomas and fragments of ovaries and of peritoneum which had to be extirpated during certain operations. These tissues were kept in cold storage from a few hours to two months. Grafts of lipoma and omentum were inserted by Dr. Tuffier between the pleura and the thoracic wall in several cases of pleurisy and intrapulmonary abscesses. In the reconstruction of joints, Dr. Tuffier several times used pieces of omentum, peritoneum and cartilage. In a case of resection of the elbow he covered the surface of the section of the bones with cartilage preserved for five days in cold storage. After seventeen months the patient was examined and the result found excellent. In another case of resection of the elbow, Dr. Tuffier covered the ends of the bones with a fragment of omentum preserved for one month in cold storage. Ten days afterward the elbow-joint could be moved easily. In ten operations of the same or similar character, there was neither elimination of the graft nor other accidents.

In 1911 Dr. Magitot of Paris extirpated the eye of a patient suffering with glaucoma. The eye was placed in a tube containing human serum, and kept for eight days in a refrigerator at a temperature of + 4 C., during which period the cornea remained transparent. Dr. Magitot resected the anterior part of the cornea of a man who had been burned by alkali. A large scar had developed on the cornea and the patient was blind. In the opening, a flap of cornea from the eye preserved in cold storage was inserted. The graft took. Seven months after the operation the transplanted cornea had remained transparent and the patient could see through it.

The results obtained by Dr. Tuffier and Dr. Magitot showed that tissues preserved in cold storage could be used in clinical surgery.

At the end of 1911 I attempted to develop a technic which would permit a large quantity of human tissues to be kept in store ready for transplantation. The tissues which are needed by surgeons in their clinical work are skin, bone, cartilage, periosteum, peritoneum, fat, tendons and aponeuroses. Some of these tissues could be extirpated from amputated limbs. I thought, however, that tissues of a better quality could be taken from the cadavers of the fetuses which had died during labor in the maternity hospitals. One cadaver, properly cut and preserved, would furnish enough tissues for many operations.

Dec. 6, 1911, the cadaver of an infant who had died during labor was used for the extirpation of cutaneous and other grafts. Several hours after death the body of the child was washed with soap and water and with ether. Dermo-epidemic grafts and flaps of skin were extirpated in large numbers and washed in Ringer's solution. Bones were also extirpated. Afterward the grafts were put in tubes containing warm petrolatum. Other grafts were preserved in Ringer's solution. The tubes were deposited in a refrigerator at + 3 C.

The Wassermann reaction made by Dr. Swift with the blood taken from the heart of the cadaver was negative.

The culture mediums inoculated with small fragments of skin remained sterile.

The dermo-epidemic grafts and the flaps of skin preserved in petrolatum and in Ringer's solution were used at the Rockefeller Hospital for the treatment of three large ulcers and one circular ulcer of the legs of two patients.

The flaps of skin preserved in petrolatum remained apparently normal. Forty-two days after the death of the child the skin preserved in petrolatum was bluish, but when exposed to the air it became pink again. The small vessels of the subcutaneous tissue were filled with blood which was red and still fluid. Histologic sections of the skin showed that it was normal. At the end of May, 1912, the appearance of the flaps preserved in petrolatum was not markedly changed. Ringer's solution was not so good a preservative medium as petrolatum. After a few weeks the flaps of skin preserved in Ringer's solution began to disintegrate slightly.

We began to graft the flaps of skin on the ulcers of the patients after twenty-four hours. The flaps were taken from the tubes and put for a few minutes in Ringer's solution at the temperature of the body. Then they were removed from the solution, compressed between two pads of hydrophil gauze and applied on the granulations of the ulcers. They were rapidly fixed to the granulatory surface by a warm mixture of paraffin, wax and castor oil, analogous to "ambrine," invented a few years ago by Dr. Barthe de Sandford, the composition of which remained unknown. The mixture I used is composed of 18 gm. of paraffin melting at 52 C., 6 gm. of paraffin melting at 20 C., 2 gm. of beeswax, and 1 gm. of castor oil.

The warm and fluid mixture was applied with a brush on the surface of the graft. It became solidified very rapidly, but it was not adherent to the grafts or to the granulations, and it was possible to take it out every day. The wounds and the grafts were washed with oil and a new coat of the mixture was applied. Most of the grafts took, just as fresh grafts would have done. The last grafts were applied on the ulcers after seven weeks of preservation in cold storage, and a few of them took. The length of the period during which the flaps of skin could be preserved in latent life was not determined. It seems that the skin preserved during two weeks took as well as normal skin. As a great many pieces of skin can be kept in petrolatum, repeated grafts on the granulating wound could be made as easily as ordinary dressings with gauze.

IV. CONCLUSIONS

The results obtained by Tuffier, Magitot and myself demonstrated that human tissues preserved in cold storage could be used in human surgery. Future investigators will show in what measure tissues of infants should be employed as grafts. The grafts could easily be taken in large quantities from the fresh cadavers of fetuses and infants, and preserved in petrolatum and in cold storage. A supply of tissues in latent life would be constantly ready for use and the tubes containing the tissues could even be sent, in small refrigerators of the type of vacuum bottles, to surgeons who would need them. It would simplify very much the transplantations of skin, bone, periosteum and aponeuroses, which are more and more used in human surgery.

ABSTRACT OF DISCUSSION

DR. JOHN STAIGE DAVIS, Baltimore: My experience has been limited to the transplantation of skin, fascia, tendon, bone and cartilage. I have been able to preserve these tissues by simple methods, and have found that all of them may be kept for a considerable time in an ordinary refrigerator or in cold storage, and then successfully transplanted. This brings up the question as to the feasibility of iso- or hetero-grafts. Lexer, at the 1911 meeting of the German Surgical Congress, made the statement that iso-skin-grafts were never successful, and that none of them ever lasted longer than three weeks. I cannot agree with him, as I have seen a number of permanently successful iso-skin-grafts. On the other hand, Lexer transplanted whole iso-joints and reports satisfactory results. It stands to reason that auto-grafts of all kinds are uniformly more successful, but there is no doubt that iso-grafts will give satisfactory results in a great many instances, if the tissues are obtained and transplanted with the proper technic.

The transplantation of tissues which will live or be replaced by similar new-formed tissue for the correction of deformities and cure of defects seems to me to be much more rational and better surgery than the introduction of foreign bodies for this purpose. For instance: in certain deformities of the face it is better to transplant fat or bone or cartilage than to inject paraffin, and in the cure of large hernias free flaps of fascia lata are much more satisfactory than the wire filigree. In the formation of new joints I believe that free fascia flaps are preferable to the insertion of any foreign material.

Fifteen months ago I tried an epiphyseal transplantation on a boy 10 years old, who had been badly injured in an accident two years previously. At the time of operation the foot was markedly everted. The lower third of the outer side of the leg, ankle and foot was covered with a mass of dense scar tissue,

which was closely adherent to the bone. *X*-ray showed absence of about 6 cm. of the lower end of the fibula. I exposed the upper end of the fibula and split it longitudinally so that about one-third of the epiphysis with its cartilage was removed, together with a portion of the shaft with its periosteum, 6 cm. in length. This was transplanted into the defect below, the graft being secured to the freshened stump of the fibula by a collar of free fascia, and the epiphyseal end fastened snugly to the astragalus by a free fascia band. In spite of unfavorable conditions on account of poor blood-supply this graft has done well. Skiagrams from time to time have shown the epiphyseal line to be present. Dr. Baetjer reported to me last week that an *x*-ray taken then showed the epiphyseal line still intact and that the bone was undoubtedly growing. This result is, to say the least, encouraging.

DR. FRED H. ALBEE, New York: My experience with the transplantation of tissues has been confined wholly to bone, about thirty-six cases. All the transplants have been auto-transplants, and the work was all done from the point of view of an orthopedic surgeon. There were cases of congenital defects in the bony skeleton, pseudo-arthroses, club-feet, etc., and I believe that in the latter class of cases this is the ideal treatment. We can reconstruct the skeleton of the foot completely by using bone wedges, thus securing a properly shaped foot. The use I have made of bone transplantation has been mostly in Pott's disease. I believe that this will be eventually the accepted treatment, and the earlier the operation is done the better. I have kept in storage recently infants' bones to be used for bone-grafting. Auto-transplantation is better, but there will be certain cases in which it is better to use some other bone, and not to subject the patient to the extra hazard of taking some of his bone.

My work in animal experimentation has been cruder than Dr. Carrel's, but I have been able to preserve dogs' bones for four days in an ordinary isotonic Ringer's solution. I have transplanted this bone and it has lived and grown. In the ice-box, of course, the temperature is far above that of cold storage, showing that we have considerable leeway in the handling of bone.

DR. A. CARREL, New York: I agree with what Dr. Davis and Dr. Albee said in regard to transplantation. It is certain that the question of the usefulness of transplantation of tissue has not been settled. Auto-transplantation gives better results than iso-transplantation, and it is only by making new investigations that it will be possible to know the value of homo-transplantation, especially if the tissues are taken from small children. That question cannot be very easily decided by skin-grafting. My experiments are too few in number to enable me to come to any definite conclusion. Many other experiments should be made.

PROPHYLACTIC VACCINATION AGAINST EPIDEMIC MENINGITIS *

ABRAHAM SOPHIAN, M.D.
Research Laboratory, Health Department
NEW YORK CITY
AND
J. BLACK, M.D.
Southwestern Medical College
DALLAS, TEXAS

Epidemic meningitis is an acute, infectious, contagious disease that is transmitted principally through the medium of healthy carriers. During an epidemic, many healthy people, especially members of families in which the disease occurs, harbor the meningococcus. The number of healthy carriers is much greater than the number of those ill with the disease; some observers estimate that the carriers are ten to twenty times the number of the sick. Only a small percentage of the carriers develop the disease; the danger, however, that anyone who is a carrier may develop the disease, is a very serious menace, and causes considerable alarm, especially in an epidemic invasion of the disease in all sections of a city, as no one knows whether he or his friends are carriers or not. The occurrence of more than one case of epidemic meningitis in families is not so rare as believed by many who are not familiar with the facts; in the recent Texas epidemic there were many instances in which two members developed the disease; and in a smaller number three, four and five members became infected. All measures of prophylaxis are, therefore, important. This paper will dwell only on the prophylactic active vaccination, which would appear to offer best hopes of success in preventing this dread disease.

The utilization of active immunity as a means of preventing meningitis, has not, we believe, been previously used.

The work of a number of observers has demonstrated the fact, that a considerable degree of immunity develops during the course of the active infection in epidemic meningitis.

Meakens[1] demonstrated the third order of immune body in the blood, by complement fixation, and employed this test for diagnosis.

Many observers have demonstrated agglutinins in the blood of meningitis patients. Some, as Von Lingelsheim,[2] 1906, Kutscher, 1906, Krumbein and Schatiloff have described uniform results in testing the immune serum plus the meningococcus; Von Lingelsheim used killed culture for his tests, and declared that the test could be used for diagnosis. Most observers, however, as Trautmann and Fomme, Eberle,[3] Ditthorn and Gildermeister,[4] Lieberknecht, 1908, Elser and Huntoon,[5] Arkwright,[6] have had irregular results in the test, the main objections being the want of uniform reaction of an immune meningococcus serum with different strains of meningococci and the fact that there is cross agglutination between the meningococci and other Gram-negative cocci. Also certain strains of meningococci are inagglutinable, and the agglutinating properties of any strain may change during cultivation. Thus Elser and Huntoon obtained agglutination with one strain of meningococcus in dilution of 1:400 with serum of a meningitis case while four other strains of meningococci agglutinated only up to 1:50. One week later, the most agglutinable strain became unusually sensitive to non-specific agglutinins, and was agglutinated in a 1:100 dilution by serum of a typhoid patient.

Davis[7] studied eight cases of meningitis and obtained positive reactions in dilutions of 1:50 in all, in one case 1:500 dilution.

The increase in opsonins has similarly been demonstrated by many observers. Houston and Rankin[8] made opsonic determinations on sixty-three cases of meningitis and found high opsonic readings after the sixth day of

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* Read in the Section on Pathology and Physiology of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

* This work was done under a grant made by the American Medical Association.

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3. Eberle, Julius: Arch. f. Hyg., 1908, xiv, 171.
4. Ditthorn and Gildermeister: Klin. Jahrb., 1907, xvii.
5. Elser and Huntoon: Cornell Univ. Med. College Report, 1909, ix.
6. Arkwright, J. A.: Jour. of Hyg., 1907, vii, 193; 1911, ii, No. 4.
7. Davis, David J.: Jour. Infect. Dis., 1907, iv, No. 4.
8. Houston and Rankin: Lancet, 1907, p. 172.

the disease, all showing an opsonic index over four, and a number showing much higher readings. Davis[7] demonstrated a decided increase in the opsonic index in some cases examined but not in others. He vaccinated himself with a very large dose of dead culture, injecting the full growth of several small blood-serum slants, and found a marked immediate increase in opsonins. He found no evidence of a negative phase. Von Eberts and Hill,[9] Birnie and Smith[10] vaccinated a few epidemic meningitis patients with meningococcus bacterin, and found a considerable increase in opsonins following inoculation.

McKenzie and Martin in the Glasgow epidemic used and recommended the use of the blood-serum of meningitis patients, especially of those recovering from the disease, to be used therapeutically by intraspinal injection. Some improvement was obtained by this method; this might be considered as the clinical demonstration of immune bodies in the blood-serum.

Immune bodies have been demonstrated in the cerebrospinal fluid of epidemic meningitis patients. Thus precipitins have been demonstrated by Vincent's[11] method, and positive complement fixation has been recently demonstrated by Bruynoglié[12] of Brussels. He employed this test successfully for diagnosis; it was of especial value in those cases in which the meningococci were few and hard to demonstrate.

Thus immune bodies have been demonstrated in those ill with meningitis, both in the blood and cerebrospinal fluid. There was a marked response in opsonins in the meningitis cases treated with vaccine.

In smaller animals, especially rabbits, and in larger animals, such as sheep and horses, there is a prompt response in the production of immune bodies after repeated vaccination. These facts, plus the apparent analogy of this disease (which probably begins in most, if not all instances, as a primary bacteriemia) to other bacterial diseases, as typhoid, and the wonderful results obtained by extensive prophylactic typhoid vaccination led one of us (Sophian), to employ and advocate this measure in the recent Texas epidemic.

The absolute demonstration of the efficacy of this measure must be determined by experimental evidence, by the demonstration of a large immune body content following the administration of the vaccine, and by clinical evidence of protection against the disease, as observed during epidemics, especially among those who have been exposed to the disease.

EXPERIMENTAL EVIDENCE

This work was taken up by us at the end of the Texas epidemic, in the Southwestern Medical College. For this purpose eleven medical students volunteered to be vaccinated.

Preparation of Vaccine.—All glassware was neutralized. An organism, about five generations old, isolated from the cerebrospinal fluid of one of the patients in Dallas, was used. It was grown on 2 per cent. glucose agar; after eighteen hours' growth it was washed off in distilled water, shaken for twenty minutes in the usual way, then heated at 50 C. for one hour and tested for sterility. It was counted by the Wright method, and standardized.

Vaccination.—Eleven students were vaccinated. They were inoculated subcutaneously just below the deltoid; five were injected with 500,000 bacteria as the first dose, and five were injected with 1,000 million. Seven days later, they were vaccinated again, with the same vaccine, in doses of 1,000 million and 2,000 million, respectively. Again a week later, they were vaccinated a third time, with 2,000 million by a freshly prepared vaccine.

Observations were made on the blood-count and the general and local symptoms. Their serums were examined every four days for agglutination and complement fixation.

Blood Analyses.—The examination of the blood showed, in practically all instances, a slight leukocytosis twenty-four hours after the injection, with return to the normal on the fourth day. There was very little change noted in the total differential blood-count. The leukocytosis was greater after the second and third injection.

TABLE 1.—AGGLUTINATION STUDIES

Case No.	No. of Injection	Dose, Mill.	Day After First Injection	Agglutination Readings												
				20	40	60	80	100	200	500	1,000	1,000	1,500	2,000	2,500	
1	1	500	6	+++	—	—	—	.....	.....	.....	.....	.....	.....	.....	.....	
	2	1,000	11	+++	++	++	++	+++	.....	.....	.....	.....	.....	.....	.....	
	.	.....	14	.....	.....	.....	.....	+++	+++	+++	.....	—	.....	.....	.....	
	.	.....	21	.....	.....	.....	.....	.....	.....	+++	—	—	.....	.....	.....	
2	1	500	6	++	+++	+++	—	.....	.....	.....	.....	.....	.....	.....	.....	
	2	1,000	11	+++	+++	+++	+++	+++	.....	.....	.....	.....	.....	.....	.....	
	.	.....	14	.....	.....	.....	.....	+++	+++	+++	+++	+++	.....	.....	.....	
	.	.....	21	.....	.....	.....	.....	.....	.....	.....	.....	+++	+	—	.....	
3	1	500	6	+++	+++	+++	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	2	1,000	11	+++	+++	+++	+++	+++	.....	.....	.....	.....	.....	.....	.....	
4	1	500	6	±	±	±	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	2	1,000	11	++	++	++	++	++	.....	.....	.....	.....	.....	.....	.....	
9	1	1,000	6	+|	+++	+++	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	2	2,000	11	+++	+++	+++	+++	+++	+++	.....	.....	.....	.....	.....	.....	
7	1	1,000	6	+	++	+++	.....	.....	.....	.....	.....	.....	.....	.....	.....	Control
	2	2,000	11	++	+++	+++	+++	.....	.....	.....	.....	.....	.....	.....	.....	—
	.	.....	14	.....	.....	.....	.....	+++	+++	+++	++	+|	—	—	.....	—
	3	2,000	21	.....	.....	.....	.....	+++	.....	.....	.....	+++	+	—	.....	—
8	1	1,000	6	+++	+++	+++	.....	.....	.....	.....	.....	.....	.....	.....	.....	—
	2	1,000	11	++	+++	+++	+++	+++	.....	.....	.....	.....	.....	.....	.....	—
	.	.....	14	+++	+++	+++	+++	+++	+++	+++	+++	++	—	—	.....	—
	3	2,000	21	.....	.....	.....	.....	.....	.....	.....	.....	+++	++	±	—	—
10	1	1,000	6	+++	+++	+++	.....	.....	.....	.....	.....	.....	.....	.....	.....	—
	2	2,000	11	+++	+++	+++	.....	.....	.....	.....	.....	.....	.....	.....	.....	—
	.	.....	14	.....	.....	.....	+++	+++	+—	.....	.....	.....	.....	.....	.....	—
	3	2,000	21	.....	.....	.....	.....	+++	++	.....	.....	.....	.....	.....	.....	—

9. Von Eberts and Hill: Am. Jour. Med. Sc., 1907, p. 134.
10. Birnie and Smith: Am. Jour. Med. Sc., October, 1907, p. 134.
11. Vincent: Compt. rend. Soc. de biol., 1909.
12. Bruynoglie: Centralblatt Orig., lx. No. 6, p. 58.

AGGLUTINATION STUDIES

Technic.—Macroscopic agglutination tests were done. The blood was collected from the finger in small glass capsules; the serum was separated and dilutions were made.

Culture.—The Elser-Huntoon organism (which these authors have found especially good for the purpose), which gives no spontaneous agglutination and is readily agglutinable by immune serums, was used. Uniform emulsions of culture were used.

After mixing, the culture and the immune serum were incubated for two hours, then placed on ice for twelve to twenty-four hours before reading.

DISCUSSION OF TABLE 1

1. The highest agglutination was obtained in those patients who had been given three injections of vaccine; the larger doses used apparently gave a somewhat higher fixation than the smaller doses.

2. Patient 10, who was vaccinated three times with the large doses, did not form agglutinins over 1 to 200.

3. Patient 2 formed agglutinins up to 1 to 1,500, after two injections of 500 million and 1,000,000, respectively.

4. The agglutinins increased after the repeated dose, and apparently developed in the larger quantities about a week after the injection.

COMPLEMENT FIXATION TESTS

Technic.—1. Serum: This was collected as for the agglutination tests, inactivated at 55 C. for one-half hour, and dilutions were made in normal salt solution.

2. Antigen: A polyvalent meningococcus antigen was used, prepared by McNeil of the Research Laboratory, H.D., New York City. This antigen is prepared as follows:

A. The culture is grown on a slant of salt-free veal agar, neutral to phenolphthalein, for eighteen or twenty-four hours.

B. It is washed off in distilled water.

C. It is then heated in a water-bath for two hours at 56 C.

D. It is next centrifugalized for about twenty minutes; supernatant fluid is taken off and sediment thrown away.

E. It is passed immediately through a Berkefeld filter.

F. Next it is put in hermetically sealed capsules and heated to 56 C. for one-half hour on two successive days for sterility.

G. It should then be stored in ice-box; may be kept for several months.

H. Before using it should be brought up to 0.9 per cent. tonicity, by adding one part of 9 per cent. salt solution to nine parts of antigen.

I. It must be titrated before using.

This antigen is specific for the meningococcus serum, and is not fixed by the gonococcus and other serums, according to McNeil. To prepare a strong fixing antigen, not so specific, longer autolysis should be allowed after heating. The important point to remember in preparing this antigen for specificity is not to allow too long autolysis; the less time allowed for autolysis, the more specific the antigen. The Berkefeld filter must be neutral.

In this series of tests both the highly specific antigen was used, and also the less specific, longer-autolyzed antigen, which was prepared later from the culture used in vaccination, and which gave somewhat sharper fixation than the more specific antigen.

3. Guinea-pig complement: Fresh complement was used; also some frozen complement one week old which proved to be perfectly active. (Dr. McNeil called my attention to this fact.)

4. Sheep corpuscles.

5. Antisheep amboceptor.

The test was done one-tenth the volume of the usual Wassermann thus saving material and enabling one to work with the small quantities of blood collected from the finger.

Titrations of all materials were done at the time of the tests.

DISCUSSION OF TABLE 2

1. Immune bodies could be demonstrated by complement fixation as early as the fourth day after the first injection (not recorded in the table).

2. The highest fixation was obtained in dilution of 1:250, and occurred about three weeks after the beginning of vaccination. The highest and sharpest fixation occurred after the three injections of vaccine, though

TABLE 2.—COMPLEMENT FIXATION

Case No.	No. of Injection	Dose, Mill.	Day After First Injection	Complement Fixation							
				10	20	30	50	100	150	200	250
1	1	500	6	±	±	±	.....	.....	.....	.....	.....
	2	1,000	11	++	++	++	++	+	.....	.....	.....
		.....	21	.....	.....	.....	.....	+++	+++	+	—
2	1	500	6	±	+	|	.....	.....	.....	.....	.....
	2	1,000	11	++	++	+++	++	++	.....	.....	.....
		1,000	21	.....	.....	.....	.....	+++	++	++	.....
3	1	500	6	±	±	±	.....	.....	.....	.....	.....
	2	1,000	11	±	±	+++	+++	+++	.....	.....	.....
4	1	500	6	+|	+\+	+++	.....	.....	.....	.....	.....
	2	1,000	11	+++	+	+++	+++	+	.....	.....	.....
5	1	500	6	+	+++	+++	.....	.....	.....	.....	.....
9	1	1,000	6	±	±	±	.....	.....	.....	.....	.....
	2	2,000	11	±	±	+++	+++	+	.....	.....	.....
7	1	1,000	6	+|	+++	+++	.....	.....	.....	.....	.....
	2	2,000	11	±	+	+++	+++	++	.....	.....	.....
	3	2,000	21	.....	.....	.....	.....	+++	+++	+|	—
8	1	1,000	6	+++	+++	+++	.....	.....	.....	.....	.....
	2	2,000	11	++	++	+++	+++	+++	.....	.....	.....
	3	2,000	21	.....	.....	.....	.....	+++	+++	++	±
10	1	1,000	6	|	±	±	.....	.....	.....	.....	.....
	2	2,000	11	+	++	+++	±	+	.....	.....	.....
	3	2,000	21	.....	.....	.....	.....	++	++	+|	—

high fixation up to 1 to 200 occurred at the third week after only two injections.

3. Note the fact, well demonstrated in Cases 3, 9, 7, and 8 on the eleventh day after injections, that much sharper fixation was obtained in the higher than in the lower dilutions of the serums. This observation had been previously noted by Sophian, in the course of some work on meningococcus strain differentiation by complement fixation, done by Drs. Sophian and Neal,[13] in the Research Laboratory, New York City, in 1911.

DISCUSSION OF EXPERIMENTAL STUDIES

1. There is a leukocytosis for a few days following vaccination.

2. There is a prompt response in the formation of immune bodies, which appear four days after the first vaccination and increase rapidly after the repeated injections.

3. Agglutinins develop in larger quantities and more rapidly than the third order of immune body, agglutination being obtained at 1:2,500 dilution, in some cases, at the end of three weeks.

4. By complement fixation one could obtain sharp fixation at 1:200 at the end of the third week, this being a high degree of immunity.

5. Apparently the very large doses did not produce much higher immunity than the smaller doses used.

6. Three injections appeared to give desirable results; the doses of 500 million, 1,000 million, 1,000 million, would seem to be sufficient.

7. All of the students vaccinated responded; No. 10, however, did not develop a very high degree of immunity.

REACTION FOLLOWING VACCINATION

The reaction following vaccination with the doses mentioned consists principally of some local inflammation at the site of injection, and usually some trivial general symptoms. All symptoms are very much improved or entirely gone in twenty-four hours.

Local Reaction.—About four hours after the injection, an area of inflammation consisting of redness, some swelling and induration appears, which grows larger during the next few hours and is frequently quite painful and tender. The neighboring glands may become somewhat enlarged and tender. After twenty-four hours, most of the inflammation disappears.

At the next injection, the local reaction may be much more marked and extensive, and may be accompanied by a large area of erythema several inches in diameter.

It is seen that the reaction described is very similar to that occurring in other bacterial vaccinations, as in prophylactic typhoid vaccinations.

General Reaction.—General constitutional symptoms may be entirely missing. Frequently, however, there is some malaise, frontal headache and slight elevation of temperature lasting for twenty-four hours. Other times there may be more severe general symptoms; the patient may suffer from quite severe frontal or vertical headache, may have some general bodily pain, nausea and vomiting, with rise of temperature to 102, 103 or 104 F. These severe symptoms are somewhat unusual. Herpes, usually labial, is occasionally seen.

It is well to remember that the soluble products of the dead meningococcus also appear to irritate the meninges at times, even in the smaller doses used in vaccination, so that one may very occasionally see some clinical signs of meningeal irritation, this being evidenced principally by very severe headache, vertigo, vomiting and photophobia. There may be some pain at the nape of the neck, but no interference with free motion. Other active signs of meningitis are missing, however; the patient does not appear acutely sick and improves rapidly in a few hours. This symptom-complex is very unusual, but it is well to remember it, so as not to become unduly alarmed.

Davis, in studying the effect of the dead culture on the normal person, injected himself with a very large dose of culture, much larger than recommended in vaccination. He experienced very severe headache, vomiting, chill, high fever and general bodily pain for several days, accompanied by quite marked prostration.

Observation will have to be made on many who have been vaccinated to determine the efficacy of the measure, especially observations during epidemics and among those who have been intimately exposed to the disease. At present, the data obtained during the last epidemic are insufficient from which to draw any deduction. Hall, of Kansas City, vaccinated about fifty families in all, about 280 people, in whom the disease had occurred, giving each the full three vaccinations. Likewise, a number of nurses and physicians were vaccinated. In none did the disease subsequently occur. In Dallas a number of people, about 100, were vaccinated. As far as could be learned very few if any had the full number of prescribed injections. Two nurses, each of whom had two injections, developed the disease some weeks after the vaccinations; both recovered. In view of the fact, that neither had had the full dose, that irregular records were kept, and that no examination of the blood was made to determine the degree of immunity produced, one can not give too much weight to such occurrence. Reports appear in the literature, similarly, of typhoid developing occasionally after full vaccination but more often after incomplete vaccinations, and likewise of small-pox after small-pox vaccination. It is well known that immunity does not develop equally well in all the vaccinated, and that at times, in a very small percentage, there may be little response to vaccinations, accounting for the failures occasionally seen.

THEORETICAL OBJECTION TO THE USE OF VACCINE

The theoretical objections to the use of vaccine as a prophylactic in this disease are the same as in other diseases, being principally the production of a negative phase during which time the patient may develop a general infection, if the infective organism be present in any of the tissues. This is seen in inoculation of tuberculin in tuberculous patients and is well illustrated in the prophylactic vaccination by typhoid vaccine. Here there have been only isolated instances, among many thousands vaccinated, of the development of typhoid shortly after the vaccination which might be explained by the occurrence of a negative phase. In those who have been vaccinated by meningococcus bacterin, many had been intimately exposed to the disease; probably the majority were carriers; a number were proved carriers. It is very questionable, especially if a small dose be used the first time, whether the negative phase would be sufficiently marked to allow entrance of the organism from the nose and throat into the general system with the production of the acute disease.

From our knowledge of the negative phase, from the experience with the prophylactic vaccination against other diseases, such as typhoid, and from the experience in the several hundred prophylactically vaccinated

13. Sophian and Neal: Research Laboratory, New York City, Collected Studies, 1912.

against the meningococcus, which showed no authentic case of meningitis following the injection of vaccine which could be explained by the negative phase, from the fact that many of the vaccinations were made on positive carriers, in whom the danger would be supposed to be most serious, one is warranted in assuming that the prophylactic injection of vaccine against meningitis, especially if only a small first dose of vaccine be used, is attended with little danger of predisposing temporarily to a true attack of meningitis, and that the risk in positive carriers in vaccination is relatively little as compared to the possibility of their developing meningitis without vaccination.

To a certain extent this danger may be obviated by taking preliminary cultures of the nose and throat before vaccination. If positive, it might be advisable first to use local treatment till the culture becomes negative. In at least six instances, however, in which the nose and throat cultures were positive, vaccination promptly was followed about a week later by negative cultures, with out other treatment.

The only other objection to the use of vaccine, prophylactically, is the slight temporary local and general reactions, which, in the majority of instances, are trivial.

SUMMARY

1. Observations will be made during the next year to determine the persistence and duration of the immunity produced by vaccination. It is very probable, however, that the immunity lasts a long time, at least a year.

2. It is desirable at the present time that the blood of all the vaccinated be examined to determine whether any immunity has been produced, and that record be kept.

3. Vaccination is followed by an immediate febrile reaction, leukocytosis and increase in immune body content, as determined by agglutination and complement fixation tests.

4. Complement fixation tests will probably give the most satisfactory results, the agglutination and opsonin tests with the meningococcus, as with other Gram-negative cocci, giving frequently very irregular results.

5. All evidence, especially the experimental, points to the efficacy of the injection of dead meningococcus for prophylactic vaccination, as a measure which would confer considerable immunity in most cases, probably partial in all, against the infection of epidemic meningitis. It is very likely that only a moderate degree of immunity will give very considerable or complete protection against epidemic meningitis, which is caused by an organism of low virulence, infecting only a very small percentage of those who are exposed and harbor the organism temporarily in their noses and throats.

6. It is very likely that if the disease subsequently develops in those vaccinated, it will be considerably modified and run a much milder course with much better outlook for recovery, as is seen in those who develop small-pox after vaccination.

7. The vaccine is prepared as described, by heating to 50 C. and standardizing in the usual way. These injections repeated at intervals of a week, in doses of 500 million, 1,000 million, and 1,000 million, would appear to afford a high degree of protection. The smaller doses, used in the experiments, produced almost as high a degree of immunity as the larger doses. This corresponds somewhat to the conclusion reached by Smith and Brooks,[14] in their work on typhoid vaccination who state that the response to immune body formation apparently increases with increasing doses of vaccine in nearly all cases. This increase becomes relatively less and less as the dose increases and its progress suggests that with sufficiently large doses, a limiting value might be reached, which if not actually a true limit, would be practically such a limit.

14. Smith and Brooks: Jour. Hyg., May, 1912.

ABSTRACT OF DISCUSSION

DR. A. D. HIRSCHFELDER, Baltimore: It seems to me that the exact height of the cerebrospinal fluid pressure, as compared with the general blood-pressure, may play some rôle in the apparent contradiction between certain of Dr. Cushing's results and Dr. Sophian's. Four hundred mm. of cerebrospinal fluid or water is equal to 31 or 32 mm. of mercury and, in consequence, is far below the general blood-pressure. Dr. Cushing's results regarding the rise of blood-pressure on injection of fluid into the cranial cavity play a rôle merely when the pressure of the fluid injected exceeds the general (mean) blood-pressure. Then the general blood-pressure must rise until it is able to overcome the pressure of the cerebrospinal fluid and bring about further nourishment of the medullary centers; but, with a relatively low cerebrospinal pressure, below that of the mean blood-pressure, the reinjection of fluid may merely stimulate the cardio-inhibitory centers, rather than the vasomotor. In some cases, you might get mechanical stimulation of the vasomotor center with the rise that Dr. Sophian reported, but, owing to a greater irritability of the vagus center, the fall of blood-pressure might result.

DR. WILLIAM LITTERER, Nashville, Tenn.: Within the past few years, I have had opportunity to see in Nashville and vicinity something like 140 cases of the epidemic spinal meningitis. Out of this number I know of three cases in which death has resulted either from the too rapid abstraction of the spinal fluid or by the too rapid introduction of the serum, two deaths from the former and one death from the latter. Since using Dr. Sophian's method I agree with him that there is much less serum used in each individual case. In using the blood-pressure as a control I feel more at ease than I formerly did in withdrawing the fluid or in introducing the serum. I certainly think the method should be used in every case in which the spinal fluid is to be removed or serum introduced.

DR. ISAAC LEVIN, New York: I should like to know what fluid Dr. Carter was using in his intraspinal injections in animals. This question is of importance, because fluids of different physicochemical constitution would produce more or less different results; and possibly the reason for the discrepancy between the clinical results, where apparently the blood-pressure changes precede the respiratory changes, and the opposite results on animals, may be due to a difference in the character of the fluid. I noticed in my own investigations that in certain species of animals one frequently finds a complete arrest of respiratory functions while the heart is still acting; so that such differences between various species of animals may exist. Still, it is important to continue the work with a fluid of more or less similar physicochemical nature.

DR. L. B. WILSON, Rochester, Minn.: In giving serum in divided doses, has Dr. Sophian found that at any time, just after the third or fourth dose, there was no longer a drop in pressure? We get a drop in blood-pressure sometimes after the first dose, with recovery; a similar drop after the second dose, though a less one, and recovery; and then very little or no drop after a third or a fourth dose.

DR. A. SOPHIAN, New York: I merely gave 400 mm. as an illustration. Many cases have considerably higher pressures, even higher than 800 mm. Dr. Carter, in his work, used Ringer's solution. The difference in his readings and mine, I believe, can be explained by the fact that he could obtain more accurate readings in his dogs, which were anesthetized. In my clinical cases, if I had been able to take more accurate tracings, I might also have detected a little respiratory change

before the large drop in blood-pressure; but the important point is that if one take blood-pressure readings one is warned by the fall in blood-pressure, and may prevent the dangerous symptoms, which are principally respiratory embarrassment and shock. One may have respiratory cessation, even though the heart continues beating for several minutes.

In subsequent punctures the reaction in blood-pressure is very irregular, so that one cannot predict in any case how the patient is going to react. In my experience, however, the fall in blood-pressure is greater in subsequent punctures than in the original, so that at the fourth or fifth puncture one may inject only a small quantity of serum and cause a large fall in blood-pressure. I have treated children, however, in whom I could not inject more than 4 to 5 c.c. at first, without causing severe symptoms and considerable fall in blood pressure. In one child of two years there was a drop from 40 mm. to 10 with marked symptoms of collapse after injecting only 5 c.c. of serum. In subsequent punctures, however, I could inject 15 c.c. without causing a large drop in the blood-pressure. The table of average doses for different ages does not always hold true. If one cannot have blood-pressure observations taken during the operation, one may venture to inject the average dose described, without causing severe symptoms in many instances. There is a group of symptoms that occurs corresponding to the fall in blood-pressure. The first symptom is stupor, and then dilatation of the pupil; next respiration becomes superficial and irregular, and general symptoms of shock appear. If incontinence of urine and feces occurs during the injection it is an indication to stop, because with these symptoms a very large fall in blood-pressure frequently occurs, which in turn is accompanied by cessation of respiration, convulsions and death.

ERYTHROMELALGIA

REPORT OF A CASE PRESENTING PERIPHERAL VASOMOTOR DISTURBANCES IN THE HANDS AND FEET FOR TWELVE YEARS, REACHING A CLIMAX IN EIGHT YEARS, WITH RECOVERY FOLLOWING TREATMENT BY SUPRARENAL SUBSTANCE *

GEORGE A. MOLEEN, M.D.
Neurologist to Denver City and County, Mercy and St. Joseph's Hospitals
DENVER

The case record which forms the substance of this paper I believe to be of unusual interest. Aside from the recovery of an undoubted case of a disease in which recovery is so rare, the light which the result of the treatment instituted may throw on the association of the internal secretions with the pathology of this vasomotor neurosis is believed to warrant its presentation.

It seems unnecessary to discuss the symptomatology and its variations *in extenso*, or the relation to other vascular neuroses, more than to share the opinion of Cassirer,[1] who after analyzing ninety observations reported as erythromelalgia, believed the majority belonged to other conditions.

As to cause, it may be said with Oppenheim,[2] that "nothing is positively known as to the termination of the condition nor can we say anything definite as to its cause."

Further, it is not without considerable hesitancy that one advocates or even suggests a treatment in a condition in which all measures have been conspicuous by their failure, and while apparent relief has occurred under various treatments, as a rule none have been flattering in their results.

In the present case, I feel somewhat as Weir Mitchell must have felt when he achieved so remarkable a result in the traumatic case, so often cited, following an operation which so utterly failed in a subsequent case.

The history and notes of the case are as follows:

The patient, W. D. W., aged 70, occupied commercially, was first seen Jan. 21, 1910. He was born in Indiana but has been in Colorado since 1892.

Family History.—Mother died of pneumonia, aged 76; father died of heart disease, aged 78; a brother died of diphtheria, aged 19; another of dropsy at 70, while a third died of hemiplegia, aged 70. There are three sisters living in fair health; one has heart disease. Otherwise, the family history is negative, including nervous and mental disease.

Previous History.—The patient admits the usual diseases of childhood, which include a severe attack of scarlet fever at 16 years of age; chills and fever at about this time and recurrent attacks until 1859, and typhoid at 14 years of age. Venereal diseases and alcohol to excess are denied. He has been a moderate smoker. His occupation has not been particularly fatiguing nor has he suffered any undue exposure.

About fourteen years ago, the tip of the forefinger and thumb of the left hand began to feel as though he was about to have a felon—a prickling sensation with swelling, accompanied by redness and pain. This was relieved by the application of poultices. This condition recurred in two or three weeks, becoming more frequent during the next two years. Then he began to notice pain in the outer side of the right foot, which, in the course of two or three weeks, involved the entire foot and became constant and severe. There was apparent swelling and the whole area would become a dark red color. This condition was invariably relieved by elevating the feet or the hand. In the feet, the condition extended as far as the ankle. In about three months, there was a remission and the patient was able to move about with little pain. During the past twelve years there have been remissions of from a few days to several months. Throughout this period there were attacks of sharp, shooting pains in the abdomen and chest, lasting but a few minutes at a time and invariably disappearing after the use of hot applications or a little whisky.

In 1900 while walking on the street, he noticed a quivering of the tongue and lips, and other attacks in which a weakening of the knees and transitory blindness occurred. These attacks would last from five to fifteen minutes. He never saw double and experienced no weakness of the hands.

In 1906, the patient became unable to walk the two blocks from the street car to his home, on account of intense pain, particularly in the soles of the feet. They burned and ached until they were elevated and cold applications were used. Motion, as well as a dependent position, often brought on paroxysms of pain.

Two years and a half ago, during the summer, there was a recurrence of severe pain in both feet; the right foot became red, hot and swollen; the left similarly but to a lesser degree. Red spots, which were also painful, appeared on the body. Relief was obtained by cold applications. The patient has now been confined to his bed for about two years.

Present History.—The only complaint is the condition of the feet and the thumb and forefinger of either hand. When the feet are lowered, they become red, hot and slightly purplish, beginning across the back of the foot and extending upward on the leg. The pain begins with an intense burning and becomes so extreme that narcotics are required for relief. The paroxysms are somewhat relieved by elevation. The intense burning and pain occur sometimes at night but a sensation of burning is present the greater part of the time. Alcohol and alcoholic solutions of menthol, cocain and camphor, applications of ice or cold water, have all afforded some relief. If it were not for the condition of the feet and to a somewhat lesser extent, of the hands, the patient states that he would be perfectly well. There is no vomiting without cause. There had been dizziness before he became bedridden, although not

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

1. Cassirer: Quoted in Osler's Modern Medicine, vi, 676.
2. Oppenheim, Bruce: Text-Book of Nervous Diseases, 1911, ii, 1332.

before he began to have pain and swelling in the feet. There have been no headaches; a transitory numbness has been present in both hands, also some weakness. The patient states that, at times, he has had difficulty in speaking, particularly in articulation. He admits slight impairment of his visual acuity and describes bright, golden rings, which appear small at first but increase in size, lasting but a few moments; they are especially noticed on extreme lateral rotation of the eyes. Appetite and digestion are good and the food is relished. Bowel action is regular. The patient sleeps fairly well when not in pain.

Examination.—Jan. 23, 1910: The patient is an anemic-appearing man of fair development and is lying in bed because of the condition which is invariably present on lowering the extremities. The legs and feet are held above the body by means of a device constructed for the purpose. When the feet (especially the left one) are lowered to the floor, the skin of the feet and toes assumes a reddish color rapidly deepening in shade until it presents a purplish appearance, which rapidly includes the dorsum of the foot, then the ankle and leg and, if allowed to remain long enough in the dependent position, the thigh participates to some extent. There is some apparent swelling. Pressure of the finger causes a blanching, which instantly or rapidly recolors and leaves no pit. Subjectively, there is a feeling of tightness about the foot and a burning sensation which is variable in degree, and also an aching pain which increases in severity. When the limb is returned to its elevated position, the superficial engorgement disappears and, in from five to ten minutes, the normal color gradually returns, leaving no trace of the hyperemia, except occasionally a slight blueness about the ankle. The skin of the feet and legs presents a glistening, thin, paper-like appearance, but this is to some extent accounted for by the applications of counter-irritants, mild and strong, which have been applied. There is no localized loss of power or wasting, other than may be accounted for by disuse. All movements are performed with equal strength and precision; the patient is able to walk with the aid of canes but the increasing tenderness and pain rapidly stop each attempt. *He speaks with clear enunciation and shows a good memory for recent, as well as remote, events. There is a moderate sclerosis in the palpable vessels, which is uniform rather than nodular in type.

Reflexes: All of the deep reflexes are present, equal on both sides and about normal in degree. There are no clonuses. Superficial reflexes are present, normal in degree, and equal on both sides. The Babinski phenomenon is absent on either side. Compression of the calf (Gordon) of either leg causes no action in the toes.

Special Senses; General Sensation: Tactile sensibility is increased when the limbs are elevated and somewhat more decidedly increased when they are dependent, at which time they become hyperesthetic and hyperalgesic. Heat is intolerable, while cold is at times soothing.

Eyes: All external ocular motion is normal, equal and without nystagmus. Pupils are 2.5 mm. in diameter, equal and respond actively to light and accommodation. There is a slight arcus senilis. The fundi present no pathologic change.

Hearing: There has been some failing in hearing which has increased during the past three years, but there are no foreign sounds. Aerial conduction is greater than bone conduction, and the fork is heard best in the closed ear.

Taste is stated to be about as usual, while it is complained that the sense of smell has been impaired since childhood.

April 3, 1910: The patient has been taking internally, suprarenal substance in 5-grain tabloids for periods of several weeks, alternated with chalybeates, which have seemed to ameliorate the condition. The application of a rubber bandage has, for a time, made it possible for him to walk about. It became necessary to-day, however, to remove the bandage on account of pain which has been present since before the beginning of a storm which is now in progress. The general condition is much improved. The patient sits in a chair with the feet elevated. The skin of the feet and legs has lost the shiny, glistening appearance and appears more nearly normal. The suprarenal substance was ordered continued during intervals of three weeks.

April 10, 1910: There is pain in the thumbs and forefingers of both hands and, if allowed to hang downward, the condition becomes aggravated, the redness appears and they are hot to the touch. The patient is able to walk about and the feet can be rested on the floor for some time with only a limited redness and the glistening color of the skin is entirely absent. Pain is present in paroxysms. He is up and about most of the day and occasionally walks without bandaging. Blood-pressure, by means of the Faught instrument, is as follows: systolic, 200; diastolic, 110.

Sept. 10, 1911: In view of absence from the United States, the patient has not been seen for ten months. The medication has been kept up, however, as previously outlined, and there has been progressive improvement and no severe paroxysms of pain during this time. The patient gets up and goes about the house every day. The feet can be lowered and maintained so for a half hour to an hour and then show but a slight amount of redness and cause no pain. Walking has caused no pain and but slight redness.

Oct. 8, 1911: The pain and burning have entirely disappeared and have been absent for about two months. Paroxysms have remained in abeyance and it is now a year since the last one.

Jan. 2, 1912: There is a total absence of the superficial engorgement previously noted. The patient has for several days complained of a burning sensation in the great toe of the right foot, on the tip of which is a spot, bluish-black or black and about the size of a 5-cent piece. Its appearance suggests a dry gangrene. It is abrupt in outline—not shaded off into the healthy skin—and presents slight marginal redness.

Jan. 14, 1912: The lowering of the extremities and the use of hot foot baths have caused the ischemia to subside and what was presumed to be a dry gangrenous spot to disappear. The patient was directed to elevate the feet as little as possible. There is now retention of urine with ammoniacal decomposition and after voluntary evacuation of the bladder, about 40 c.c. are removed by the catheter. Excepting the annoyance of the secondary cystitis occasioned by the prostatic enlargement, the patient is well.

Jan. 28, 1912: The patient is up and about and following instructions; he walks a good deal about the house; in fact, as much as the general weakness will permit. He suffers no pain or burning and the feet may be dependent, moved or used for hours without occasioning the return of the hyperemia. There has been no recurrence of the pain or burning sensation. Blood-pressure (systolic) is 145 mm.*

FORMS AND ASSOCIATED CONDITIONS

James Collier[3] has reported six cases of disseminated sclerosis, two of tabes and one of chronic myelitis, in which erythromelalgia occurred.

A case of Graves,[4] a woman aged 82, presented erythromelalgia of the right foot a month after an attack of hemiplegia.

The upper and lower extremities were attacked in Auché and Lespinasse's[5] case, as well as the face, eyes and ears.

Gerrard's[6] cases, in the tropics, can hardly be considered to conform to the chief characteristics of the disease, but rather to suggest a tropical form of peripheral neuritis with vasomotor manifestations.

Some cases again, like that of Kanoky and Sutton,[7] would rather seem to come under the angioneurotic edemas than erythromelalgia.

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* During absence from the city in June, 1912, the patient acquired some acute illness from which he died. Reliable details are not obtainable and unfortunately a necropsy was not made.

3. Collier, James: The Occurrence of Erythromelalgia in Diseases of the Spinal Cord; An Account of Ten Cases, Lancet, Aug. 13, 1898.

4. Graves: Painful Affections of the Feet, Clin. Lect. and Rep. Lond. Hosp., ii, 586. Sydenham Society's Edition.

5. Auché and Lespinasse: Sur un cas d'érythromélalgie ou névrose congestive des extrémités, Rev. de méd., 1889, ix, p. 1049.

6. Gerrard, P. N.: Burning Foot or Erythromelalgia Tropica, Dublin Jour. Med. Sc., 1904, cxviii, 192.

7. Kanoky and Sutton, R. L.: A Case of Erythromelalgia, THE JOURNAL A. M. A., Dec. 19, 1908, p. 2157.

In some cases, spots of hyperemia have been noticed on the trunk as well as on the extremities, as in Benda's[8] case, which showed the red areas on the neck, while in the case here reported, there were spots on the trunk.

The relation between erythromelalgia and symmetrical gangrene has been discussed and the syndrome has been found associated with Raynaud's disease and intermediate cases between the two diseases have been recorded by Morell and Lavellée[9] and Rolleston.[10] Sir James Paget[11] described a case in which extreme pallor preceded the redness and swelling; pain was present during the pallor, and was relieved at the onset of the redness.

A case observed by me in 1908, and similar to the last, occurred in a woman aged 35, who was in good health otherwise. The fingers were first affected three years before, and later, the toes became affected. The attacks occurred suddenly, without regularity and were characterized by blanching of the tips of the fingers, which rapidly became cadaveric up to the base, where it ended abruptly. The same condition occurred in the feet up to the ankles. This was accompanied by tingling and insensibility to touch and pain. The fingernails were very white; there was an appearance of shriveling or wasting and they were cold to the touch. After a varying interval of from fifteen minutes to half an hour, the ischemia receded slowly in the reverse order and was replaced by an intense redness, swelling, heat and marked tenderness to palpation, but no hypersensitiveness.

Many cases are reported in which an evident vasomotor disturbance with neuralgic pains have occurred in association with different organic and functional nervous diseases.

PATHOLOGY

Some writers regard the disease as an angioneurosis, affecting the vasomotor centers in a manner opposed to that of acroparesthesia and symmetrical gangrene.

Cavazzani and Bracci[12] think it is a neurosis with primary involvement of the vasodilators.

Eulenburg[13] expresses the opinion that it is due to a spinal disease, involving the posterior and lateral gray matter of the cord.

Weir Mitchell and Spiller,[14] in view of the finding of degeneration of the sensory fibers in an amputated toe, state: "We believe, therefore, that we are justified in attributing the symptoms in this case to peripheral neuritis . . . we must conclude that involvement of the sensory fibers anywhere between the spinal cord — or possibly within the spinal cord — and the peripheral ramifications are capable, under certain circumstances, of causing erythromelalgia."

Hamilton,[15] who found marked arterial thickening with narrowing of the lumen and some fibers in the feet which failed to take the characteristic stain, believes that we are forced to accept the "rather vague explanation" of some disorder of the vasomotor system.

Three cases reported by Shaw[16] would seem to be typical, and in all, examination revealed arterial change, but no changes in the peripheral nerves.

The conflict of the findings is seen when the oft-mentioned case of Dehio[17] is compared with that of Weir Mitchell and Spiller.[14] In the former, the hand and foot were involved and portions of the ulnar nerve and artery were removed without improvement. The nerve showed no abnormality and the artery presented an arteritis involving the intima and media. In the latter, examination of the great toe which was amputated showed the nerves and blood-vessels to be much degenerated.

If we consider with Sachs,[18] that "erythromelalgia is relatively frequently associated with gangrene, especially dry gangrene," the occurrence of gangrene after the treatment followed in the case presented fails to have significance. If, however, we study those cases which conform to the true type and, as Weir Mitchell states and is quoted by Barlow[19] and subscribed to by Shaw[16] "gangrene does not occur," one may be more justified in inferring an overaction of the suprarenal substance, a conclusion which rather takes emphasis from the long duration and progressive course than if it were stationary or an ameliorated one.

TREATMENT

Of the treatments advocated, the results have varied as much as the plans adopted. Recovery is reported following psychotherapy and also through major surgical intervention.

Prolonged rest in bed, electricity, incisions into the swollen, red areas, amputations of toes and fingers, all have been tried with relief in some instances, but without notably affecting the general course of the disease.

A severe case recorded by Allen Sturge[20] appears to have ended in recovery after several years which was attributed to "faith healing."

Achard and Levi[21] state that in cases associated with emotion in hysterical individuals, psychotherapy might be of use even in the hypnotic state. While electric treatment has given good results in the hands of Sigerson, some authors believe it was through its suggestive influence.

Achard and Levi also state that recovery took place in a case following malaria, by the use of quinin.

In Vorhees'[22] case, fluid extract of ergot seemed to give relief.

In the traumatic case of Weir Mitchell,[23] in which the internal saphenous and musculocutaneous nerves were resected and the two plantar ends of the posterior tibial nerves stretched, a most remarkable relief followed and the patient was able to resume his work. In a subsequent case, the same treatment resulted in gangrene and death.

According to Lewandowsky,[24] suprarenal substance acts as a stimulant, not only to the vascular muscle fibers but to all the involuntary muscles. The giving

8. Lewin and Benda: Erythromelalgie, Berl. klin. Wchnschr., 1894, p. 53.
9. Morell and Lavellée: Un cas d'érythromélagie, etc., Bull. Soc. franç. de dermat. et de syph., 1891, ii, 354.
10. Rolleston: A Case Showing Some of the Features of Erythromelalgia, Lancet, 1898, 783.
11. Paget, James: A Case illustrating Certain Nervous Disorders, St. Barth. Hosp. Rep., London, 1871.
12. Cavazzani and Bracci: Quoted in Oppenheim's Text-Book of Nervous Diseases, ii, 1333.
13. Eulenburg: Neurol. Centralbl., 1893, p. 657.
14. Mitchell, S. Weir, and Spiller: Am. Jour. Med. Sc., 1899, cxvii, 13.
15. Hamilton, A. S.: Report of a Case of Erythromelalgia with Post-Mortem Findings, Jour. Nerv. and Ment. Dis., 1904, xxxi, 217.
16. Shaw, H. B.: The Morbid Anatomy of Erythromelalgia Based On the Examination of the Amputated Extremities of Three Patients, Brit. Med. Jour., 1903, i, 662.
17. Dehio: Berl. klin. Wchnschr., 1896, xxxiii, 817.
18. Sachs: Am. Jour. Med. Sc., 1908, cxxxvi, 563.
19. Barlow: Allbutt's System of Medicine, 1899, vi, 607.
20. Sturge, Allen: Tr. Clin. Soc. London, 1879, xii, 156, sequel, xxii, 381.
21. Achard and Levi: Semiologie Nerveuse, p. 580.
22. Vorhees, I. W.: Some Notes on a Case of Erythromelalgia with Treatment, Med. News, Oct. 15, 1904, p. 737.
23. Mitchell, S. Weir: Clinical Lessons on Nervous Diseases, 1897, p. 185.
24. Lewandowsky: Quoted in the United States Dispensatory, Ed. 19, p. 583.

by mouth has been regarded of feeble influence; nevertheless, such administration extended over a long period of time would seem to bring about a like action more slowly and more enduring; and it was for this reason that I used it in my case.

CONCLUSIONS

The syndrome is seen in association with diseases of the spinal cord and peripheral nerves, but is occasionally seen in a pure form.

It is often difficult to differentiate it from the neurotic edemas which it somewhat resembles.

The pain in some cases would appear to be the result of disturbance in the peripheral nerves, the posterior roots, or possibly, the lateral columns of the cord, while in others, the burning and aching might be due to mechanical irritation of the peripheral nerve-endings, primarily.

In the treatment, rest in bed has been in most severe cases already made necessary by the pain aggravated by the upright position.

In view of the vasomotor theory in the production of vasoconstrictor paralysis, the apparent influence of suprarenal substance in my case would seem to add testimony and justify its use in plain or uncomplicated cases.

Constitutional treatment is usually indicated to overcome the results of inactivity and confinement.

A rubber bandage may at times render it possible for the patient to be on his feet with less discomfort and thus contribute to the betterment of his general condition.

325 Mack Building.

ABSTRACT OF DISCUSSION

DR. L. PIERCE CLARK, New York: Weir Mitchell's type of erythromelalgia is rare indeed. Many cases so reported on closer investigation prove to be the mildest types of neuritis, or, more frequently, a phase of arteriosclerosis or a kindred vascular disorder of the finest arterioles. It seems quite likely that the disorder should still be regarded as a syndrome and not as a distinct disease. Any form of treatment of erythromelalgia is usually most discouraging.

DR. GEORGE A. MOLEEN, Denver: In the study of all the cases reported there is wide variation in opinion as to the pathology. There is no attempt to cast discredit on the prevailing general views. The object of reporting the case was if possible to throw some light on the influence of the internal secretions as possibly controlling the vasomotor dilatation in these cases.

DIET AND HYGIENE IN DISEASES OF THE SKIN *

L. DUNCAN BULKLEY, A.M., M.D.
NEW YORK

Diseases of the skin are notoriously rebellious, and some cases tax the skill and patience of even the specialist to an annoying degree. In some instances they seem almost incurable; but there is a cause for everything in this world, and human skill and discernment are gradually probing Nature, and the science and art of medicine has progressed incomparably of late years, along the lines of both etiology and treatment. There is still, however, much to be learned regarding many diseases of the skin, as to their causation, persistency and proneness to recur.

* Read in the Section on Dermatology of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

It is no great wonder that they should have these latter characteristics if we do not reach and rectify their underlying causes.

I say "underlying causes," for I recognize fully the local agencies, parasitic, microbic and others, which produce many of the lesions on the skin; but the fact remains that there must be some condition of the system or tissues which often escapes detection and which either renders the skin susceptible to local disease or directly excites it thereto; for but few of the diseases appearing on the skin are like small-pox, in which the poison secures immunity from another attack. We have learned that all of us are exposed to the infection of tuberculosis almost daily, and yet very few are seriously affected, and in like manner pus cocci are well-nigh omnipresent, though relatively few persons are afflicted with boils, carbuncles or pus infections.

The thoughtful physician seeks, therefore, to know why it is that these exogenous etiologic elements should produce an eruption in one individual and not in others, and why the same individual may at one time escape and at another time suffer from their baneful influence. True science should look deeper than local causes in a large share of many kinds of diseases, both of the skin and other portions of the body, and the careful study of metabolism is throwing great light on the true pathogeny of many affections, including some of those of the skin. As the study of metabolic disturbances progresses, illumined by careful volumetric analyses of the urine, that true indicator of the state of the arterial blood, it will become more and more apparent that successful practice will depend on the careful recognition and treatment of disordered systemic conditions, with due regard to local causation.

That many affections of the skin have more or less to do with the nutritive processes which are continually going on within the body, and are affected to a greater or less degree by the manner in which metabolism is carried out, there can be no doubt. This has been clearly shown by many, and was the special topic of discussion at the Fifth International Dermatologic Congress in Berlin, in 1904, with a number of papers on the subject. It is a matter of the greatest importance, further discussion of which is prevented by lack of time.

But all recognize that metabolism is influenced, or determined for good or bad, to a great degree by the proper or improper action of the various organs and emunctories of the body, and universal experience shows that these are again influenced continually by the character of food and drink taken.

We see, then, that there is a thoroughly scientific basis for the thesis that diet and hygiene are of importance in relation to many diseases of the skin, and many of us can recall instances in which the clinical evidence of this is irresistible. Thus, it is a matter of common observation that acute erythema and urticaria may result in certain persons directly from the ingestion of certain articles of food, as shell-fish, strawberries, mushrooms, bananas, etc. It is also well known that in some persons crops of acne will follow the free use of certain articles, as buckwheat, chocolate, nuts, cheese, fruit cake, pastry, fried articles, etc. The ill effects on the skin of alcoholic drinks is also a well-recognized fact, and many further illustrations could be given.

The effect of diet and rules for its guidance in connection with many diseases of the skin have not yet been at all clearly worked out, for unfortunately few have apparently made much study or observation in this direction, and very little is found on the subject in text-books or

current literature. But from what is known of the subject we may conclude that there are four methods, or directions, in which diet can have an effect on many diseases of the skin:

1. There may be a direct irritating action from the ingesta on the stomach and intestines, giving rise to reflex cutaneous eruptions, in the same manner as in the erythema and urticaria from shell-fish, strawberries, mushrooms, etc. These eruptions often vanish very promptly when the offending mass is rejected by the stomach or removed by purgation.

2. Articles of diet may produce various forms of gastric or intestinal indigestion, giving rise to imperfectly elaborated material, or to toxins, which then have a directly irritating effect in their circulation through the capillaries, as in the acne from indulgence in sweets, pastry, cheese, etc., or the irritating effect of an excessive proteid diet in psoriasis and some other eruptions.

3. Possibly certain elements may act directly on the skin tissue, as do some drugs, such as iodids, bromids, etc.; it is more than probable that alcohol, which can be excreted by the skin, may act in this way.

4. The error in diet may consist in the absence of certain elements in the food, requisite for the proper and exact nutrition of the skin, interfering with the process of keratinization, even as rickets arises from the absence of the proper salts in the food; also in scorbutus, the absence of the vegetable acids and salts affects the tissues, which condition is checked when these are supplied.

While it is true that it is difficult in many instances to trace disease directly to the effect of definite errors in diet, accumulated experience has shown that the converse is often true, namely, that relief from many conditions of disease can often be obtained by certain regulations of diet. Thus, no one questions but that the former prevalence of attacks of acute gout was due largely to the free partaking of certain rich, sweet wines, such as port and Madeira, and that the relative infrequency of such cases is due to the fact that these particular wines are now much less frequently taken—certainly not in such quantities as formerly.

The strong claims in past years that uric acid in the blood was the cause of many troubles, while not now accepted in its entirety, has undoubtedly been of great service in directing attention to errors in nitrogenous metabolism, which has thus resulted favorably in the dietary and other treatment of many diseases, both of the skin and other organs.

A most striking illustration of the beneficial effect of a restriction of the nitrogenous food, under certain conditions, is found in the so-called "rice diet" which I suggested not long ago, after an experience with it in many cases for five years, one of which may be briefly recorded:

In January, 1906, a man, aged 45, was referred to me with an exceedingly severe attack of bullous erythema multiforme, of which he had had two similar attacks within the previous three years. The attack began suddenly at 4 o'clock the previous afternoon, after eating heavily and drinking champagne. Beginning with a few papules and very severe itching, it developed with great rapidity, so that when first seen the patient had large bullæ over the hands and wrists, some of them hemorrhagic. His agony was intense from the burning and itching; pulse was 88 and throbbing, and the tongue was coated. In addition to a laxative and alkaline diuretic, the patient was given a diet of boiled rice, with butter, bread and water. The result was surprising, for the progress of the disease seemed to be arrested instantly, and in five days there was only some scaling. The patient remarked on the great difference between the course of this most severe attack and the others he had had.

Since that time I have employed the same dietary treatment in quite a large number of cases of various acute inflammatory affections of the skin, in which careful volumetric urinary analyses showed defective elimination, with most gratifying results; these have been so different from what I had previously obtained, that with this diet one can almost promise that the very greatest relief can be afforded in a very short time in conditions which were previously much more rebellious.

In my own person I experienced the beneficial effects of this diet in a remarkable manner on three occasions.[1]

I had had an acute vesiculobullous eruption on my hands for a number of summers, which proved very rebellious each year to the most varied treatment. After it had increased to a distressing degree, so that the hands were greatly swollen and covered with bullæ which kept the fingers apart, two years ago I placed myself on the diet mentioned, taking only rice, boiled in water, bread, butter and water three times daily for five days. Within twenty-four hours there was remarkable relief to the tension and itching, and within forty-eight hours there was very little discomfort on washing and wiping the hands, which before had caused agony. Within four days the bullæ were quite flaccid and the swelling of the hands was gone, and a week later the skin was almost normal. After five days of the diet, I resumed ordinary living, and about two weeks later there was a return of the eruption, with vesicles and bullæ, and great itching. I then stopped all medication which I was taking and resumed the rice diet, and the effect was the same: the irritation ceased, almost as by magic, and in three days the vesicles and bullæ had subsided. I then returned to a more moderate mixed diet and remained free from trouble.

Last summer the eruption reappeared, as usual, but resort to the rice diet early, for five days, quite checked it, without any medication whatever, and with more care in my ordinary diet I remained free from eruption. I may say that I am not a high-liver, take relatively little meat, and seldom touch alcoholic beverages.

An interesting point in connection with this almost perfectly non-nitrogenous diet relates to the urinary secretion. I had a complete volumetric analysis of the urine made the day before undertaking the rice diet, and then again at the expiration of the five days. The results showed that at the end of that time I was passing the full normal amount of urea and a little excess of uric acid, although I had taken no nitrogenous food. This can be explained only by the removal from the tissues of stored-up and effete nitrogenous matter, the elimination of which gave relief to the cutaneous symptoms.

I have employed this diet in a very large number of cases of acute inflammatory disease of the skin in private and hospital practice for over six years, with the happiest result, and seldom have found a case not benefited, although, of course, the treatment must be used with judgment.

I have mentioned five days as the time in which it will commonly manifest its good effect, but in certain cases this course may be repeated now and again if the symptoms flare up. I had one private patient with eczema who voluntarily continued it for a month, because of the continued well-being, and yielding of the eruption; in one hospital patient, with very general eczema and most severe rheumatoid arthritis, the rice diet was gladly persisted in week after week during her entire stay of three months, with the result of not only the disappearance of the eruption but a most remarkable change in the arthritic trouble; the fingers which were distorted side-

1. Bulkley, L. D.: Personal Experience with a Very Restricted Diet (Rice) in Acute Inflammatory Disease of the Skin, Med. Rec., Jan. 28, 1911.

ways and previously immovable loosened up so as to be quite useful. In still another case in private practice a woman, aged 45, with very general and severe psoriasis, actually continued on this diet voluntarily for five months, with a few slight breaks when visiting; this was followed by a most marked improvement to the psoriasis, which had nearly disappeared, with complete cessation of the patient's rheumatism, which had been very distressing, and a surprising improvement in her health and vigor. These are remarkable and exceptional cases and are mentioned only to illustrate that the system can secure calories enough from this diet to maintain nutritional equilibrium, or even gain in weight, as did the hospital patient, while the others lost but a trifle on the scales.

Time forbids dwelling on many points of interest in connection with this diet, but a few words must be added which are of importance in order to secure the best results. It is essential that these carbohydrates should be masticated most thoroughly, fletcherized, and to secure slow eating I direct that a fork and not a spoon be used, and that at least half an hour be taken for the meal. The rice is boiled in water, eaten hot, with plenty of butter on it, as also on the bread, which must be twenty-four hours old; the water may be taken hot or cold, but not iced, and apart from actual eating, that is, not to wash down the food.

Along this same line of sparing nitrogenous metabolism comes the vegetarian treatment of psoriasis which I have been urging for the past twenty years and more,[2] and which often yields such brilliant results. It is hardly necessary to enter largely on this subject now, but a few words may be of service. While I have repeatedly seen the eruption steadily fade and actually disappear under a perfectly rigid vegetarian diet, properly carried out, with absolutely no internal or local treatment, this is, of course, exceptional and the best results are obtained by a thorough treatment along all lines; but from watching very many cases, with careful notes over a long period of time, I am confident that the absolute vegetarian diet is of the very greatest service in securing immunity from the eruption.

It is, however, true that there will sometimes be a recrudescence of the eruption, to a greater or less extent, even while the patient is supposed to be under a rigid vegetarian diet, but, as a rule, the outbreak will not be nearly so severe or persistent as previous ones. The lesions will be small and much less pronounced and will commonly yield more readily to appropriate treatment, dietary and medicinal.

This recurrence of the eruption may be accounted for in several ways, and does not at all weaken the argument for a vegetarian diet in psoriasis. First, it is always possible that the patient may not have adhered to the restricted diet as absolutely as supposed and reported. Second, the details of a proper vegetarian diet have by no means been all worked out, and it is quite possible that some article in the vegetable kingdom may lead to the faulty metabolism which is at the bottom of psoriasis. We know that beans, peas and lentils contain a large percentage of proteid, and I had one very intelligent man who reported that he had some lesions whenever he partook largely of them. Third, there may be such a wrong action of some of the internal organs that even a purely vegetarian diet does not always secure a perfect blood condition. Fourth, there may be other causes at work, as yet unrecognized, which favor the eruption.

Many cases have for years been watched in another way, which also proves the value of the vegetarian diet. Repeatedly it has occurred that the patient for one reason or another has broken away from the rigid rules given, and on returning to a free meat diet has had a recurrence or increase of the eruption, and has returned penitently and gladly resumed dietetic treatment, with satisfactory results.

In regard to the length of time necessary to continue this strict vegetarianism, it is difficult to state, unless it be that it be permanently maintained, for the same causes will generally produce the same result, and a return to a faulty nitrogenous metabolism may again cause the eruption. It is understood that this diet includes perfect abstinence from all food which is not produced directly from the ground, with the single exception of butter, which should be freely taken, as it furnishes relatively about the largest percentage of calories possible. All forms of meat, fish, shell-fish, eggs and milk are excluded, and cereals and vegetables form the basis of diet. But some articles of the vegetable kingdom are to be excluded, for sweets and pastries do harm, and alcohol in any form is strictly prohibited. I have frequently found that free indulgence in acid fruits increases the eruption, and dried beans, peas and lentils have been already mentioned as likely to excite the eruption, when taken in excess.

Milk was mentioned as excluded from the dietary, because when taken with other food it often seems to clog the liver action and thus act badly in psoriasis, as well as in acne and some other dermatoses. But in nervous and debilitated subjects with various diseases of the skin it often serves a most excellent purpose, and does not seem to disagree with the eruption, when taken in the manner which I have so long advocated;[3] namely, absolutely alone, at blood heat, and one hour before the meal, provided that nothing has entered the stomach since the preceding meal, and that the process of digestion has been fully completed, and the stomach is in the condition of the "alkaline tide."

Time does not permit the consideration of many points of interest regarding the dietary relations of many other diseases of the skin, but it is hoped that enough has been said to demonstrate that the condition of the skin may be profoundly influenced by the character of the food and drink taken. And if in certain affections of the skin the influence of diet is so striking, is it not probable that in many others the dietary influence may be of more or less importance? And, as stated at the beginning, may it not be that much of the proverbial rebelliousness of skin affections as a class is, in part at least, due to wrong nutrition as influenced by an erroneous diet?

It is an interesting fact that even microorganisms require a proper soil in which to propagate, and we have learned that even the tubercle bacillus is relatively harmless to the many whose nutrition is perfect, and that tuberculosis is best overcome by proper feeding and hygiene. We all know that in the laboratory the various microorganisms grow only on their own proper mediums. It is also a curious fact that ringworm of the scalp, which is so easily contracted by young children and is often so rebellious in them, has a strong tendency to cease with puberty; it is the rarest thing to find it on the scalp of an adult.

2. Bulkley, L. D.: Report of 140 Recent Cases of Psoriasis in Private Practice Under a Strictly Vegetarian Diet, THE JOURNAL A. M. A., Aug. 26, 1911, p. 714.

3. Bulkley, L. D.: Relations of Diseases of the Skin to Internal Disorders, New York, 1906, p. 112.

Hygiene is closely linked with diet as an element of importance to consider in connection with many affections of the skin, though it is too often disregarded. There are many essential points which might be dwelt on with advantage, but time forbids other than a brief mention. Mr. Fletcher and others have shown conclusively that rapid eating and imperfect mastication are a source of disease, which can often be remedied by a proper attention to these matters, and this I have found of the utmost significance in connection with many cases of diseases of the skin. Digestion begins with the saliva, in the mouth, and if this portion of the digestive process is imperfectly performed there must be some difficulty in other organs performing their functions perfectly. So that from experience I have found it wise to insist that the mouth is made to do its work properly; in other words, that the food is fletcherized.

Regularity of life is undoubtedly a contributory element to good health, and when one organ, as the skin, is diseased, it will naturally return to the normal state and remain so more readily if regularity is attended to. This refers to regularity in the hours of eating and sleeping, and it would surprise many to hear the confessions drawn out from patients with various obstinate skin affections, in regard to the hygienic elements in these directions which are grossly at fault. The hurry and excitement of the present age are unquestionably contributory elements in many diseases, and from long observation I am confident that they have a strong bearing also on many of the more rebellious forms of diseases of the skin.

Proper internal and external treatment are, of course, of the utmost importance in controlling and curing many cutaneous diseases, but the close student will also find in proper diet and hygiene agents which are of the highest value in overcoming many of the troublesome affections which, while appearing on the skin, are often only outward "danger signals" of something wrong in the internal economy, and in the manner in which it is nourished and cared for by diet and hygiene.

531 Madison Avenue.

ABSTRACT OF DISCUSSION

DR. M. L. RAVITCH, Louisville: Dr. Bulkley has laid a great deal of stress on diet. I do not believe that uric acid is a causative factor in skin diseases. I have made more or less exhaustive analyses of the urine in all skin cases, and have never found anything distinctive. I have never seen psoriasis affected by any prescribed diet. I do not regard diet as an important factor in the majority of skin diseases.

DR. L. D. BULKLEY, New York: For the past forty years I have been observing the effects of dietary errors on the skin, the improvement that rapidly followed in many cases after a careful regulation of the diet, and I am just as certain about every word I said in my paper as I am of my own existence. I am sorry that the younger men, who have, perhaps, not had the opportunity or experience, do not grasp the importance of this factor, but I believe they will in time.

The Narcotic Effects of Alcohol.—Alcohol, like ether, has a twofold action: (1) temporarily exhilarant; (2) depressant for a longer time. As with chloral the temporary stage of exhilaration is followed by a stage of sleepiness or insensibility. A little ether or chloroform gives a pleasant feeling of warmth and a sensation of vigor followed by drowsiness and a desire to sleep. In larger quantities there is a short stage of exhilaration, talkativeness and babbling, followed by complete loss of mental control; the bodily temperature is lowered and a stage of deep sleep and a loss of power to move ensues. Alcohol acts in precisely the same way.—B. C. Keister, in paper read before the Medical Society of Virginia.

INTRAMAMMARY INJECTIONS OF OXYGEN IN THE TREATMENT OF ECLAMPSIA

ESPY WILLIAMS, M.D.
PATTERSON, LA.

In a recent editorial[1] the similarity existing between the milk-fever of cows and eclampsia in women is discussed. It is considered first that the milk-fever of cattle is caused by the elaboration of a toxin, or toxins, in the udder of the animal, which on absorption are productive of the disease in question; the toxicity of colostrum when injected into the animal subcutaneously is spoken of in evidence. The likelihood of production of such toxins by a gland of such size as the udder, when brought suddenly into a state of intense activity following a period of more or less quiescence, is remarked on. It is stated also that "a therapeutic advance which has almost completely abolished the mortality from the disease (milk-fever in cows) and has greatly facilitated a speedy recovery, . . . consists in acute dilatation of the udder by means of suitable liquids or gases. Originally introduced on the hypothesis that an infection of the udder was to be combated, the injection of antiseptic solutions has been replaced by those of bacterially inert agents with equal efficiency." Healy and Castle, whose work is referred to in this editorial, further conclude:

> We are of the opinion that eclampsia is due to a similar toxin elaborated by the breast in a similar manner, and would strongly recommend, as the most promising treatment, dilatation of the breast with oxygen or sterile air, accompanied with vigorous massage of the breasts, or forcible compression of them by means of a properly applied bandage, at the same time using whatever medical measures may be indicated. We ourselves shall thoroughly test this method of treatment as soon as the opportunity occurs.

With these facts in mind, the method was tried in the following case:

> The patient was a white secundipara, aged 27. The first pregnancy and labor occurred two years ago and were normal. The present pregnancy had progressed satisfactorily and without complication to term. At 10 a. m. the patient was delivered of a living child, after a labor lasting three hours. The first convulsion occurred six hours after delivery, at which time I found the patient completely comatose. The pulse was 140 and temperature 102.5. The bladder contained 2 ounces of highly albuminous urine. The following treatment was given: one-fourth grain of morphin sulphate and 10 minims of tincture of veratrum viride hypodermically; 10 ounces of blood were taken from the arm; 10 grains of calomel and 0.25 grains of elaterium were forced down the throat and hot packs and proctoclysis with normal salt solution were employed. Under strict aseptic precautions, and washed through a strongly phenolized solution, oxygen was introduced into each breast from an ordinary tank of the compressed gas. Each breast was completely filled, the gas also finding its way into the thoracic areolar tissue and distending the parts as high up as the clavicle. Each breast was then strapped down tightly and a figure-of-eight bandage applied over this. No massage was used. After institution of treatment there were two slight convulsions; the pulse fell to 60 (veratrum influence, I believe), the bowels moved in three hours; consciousness was first regained in four hours; urine began to be plentifully secreted, and subsequent recovery was progressive and uneventful.

This report is given for what it is worth. Eclampsia is a complication of such high mortality, and the methods of treatment heretofore advocated are so wholly empiri-

1. THE JOURNAL A. M. A., April 20, p. 1201.

cal that we all grasp with avidity any new thought concerning it. The idea as to the modus operandi of this treatment, gained from the editorial above quoted, is that of "shutting off entirely or largely the blood-supply of the milk-gland until it has the opportunity to resume its ordinary excretory activity, thereby eliminating the toxic product in the colostrum or milk." Whether by such a procedure we can "shut off" the blood-supply to any but the slightest extent, in an organ so anatomically arranged as to make such a result very difficult of attainment, is a matter for discussion. An interesting point in the case reported here is the fact that, notwithstanding the extreme distention of the tissues and the tight strapping and bandaging, the absorption of the gas was very rapid. The idea naturally suggests itself, that the effect may be due, to the greatest extent, to a direct action of the oxygen on the toxins themselves.

St. Mary's Hospital.

NOTE ON A PEPTID-SPLITTING AGENT IN HUMAN BLOOD-SERUM

FRANK SMITHIES, M.D.
Gastro-Enterologist to St. Mary's Hospital (Mayo Clinic)
ROCHESTER, MINN.

A PRELIMINARY REPORT

The researches of Vaughan, Cumming and Wright[1] and Nicolle and Abt[2] seem to indicate that proteins introduced into the peripheral circulation or serous sacs undergo what Vaughan terms "parenteral digestion." These workers consider parenteral cleavage of proteins a very important factor in the body's defensive mechanism.

Apart from the laboratory or clinical evidences that the blood and body cells split foreign proteid in a manner corresponding to its hydrolysis *in vitro*, we have not noted previous evidence that such cleavage is actually carried on in the circulation.

Recently, while studying the biochemical properties of blood-serum (particularly the serums from patients affected with some form of gastro-intestinal neoplasm), we had opportunity of investigating its action on the dipeptid, glycyltryptophan (Fischer).[3] This dipeptid is indol-alpha-aminopropionic acid (tryptophan) combined with glycocoll. It has been shown by Neubauer and Fischer[4] and Abderhalden[5] that glycyltryptophan is readily hydrolyzed by ferments and that the cleavage product, tryptophan, can be conveniently recognized in acid solution by admixture of bromin vapor.

We have found that when aseptically obtained fresh blood-serum is combined with a solution of glycyltryptophan (Fischer) and incubated under toluol at 37 C. for twenty-four hours, on acidulation with 3 per cent. acetic acid, typical rose-pink to violet color changes occur on the admixture of bromin vapor. These color changes persist for varying lengths of time. Control serums heated to 80 C. previous to incubation do not give such glycyltryptophan reaction. Neither is such reaction obtained if serums are incubated alone, are mixed with absolute alcohol, 1 per cent. mercuric chlorid solution, 2 per cent phenol (carbolic acid) solution, 0.25 per cent. alphozon solution, or antiformin.

Not all blood-serums split glycyltryptophan solutions with equal rapidity or completeness. There are some serums which have almost lost their power of splitting this dipeptid. These are frequently from patients not well. Varying dilutions of serum with normal salt solution or distilled water exhibit certain variations which seem to permit of a quantitative interpretation.

The agent in blood-serum causing the cleavage of glycyltryptophan appears to have the qualities of an enzyme.

1. Vaughan, Cumming and Wright: Ztschr. f. Immunitätsfsch. u. exper. Therap., May 13, 1911, p. 458.
2. Nicolle and Abt: Ann. de l'Inst. Pasteur, February, 1908.
3. Fischer, E.: Ber. d. deutsch. chem. Gesellsch., 1901, xxxiv, 2864.
4. Neubauer and Fischer: Deutsch. Arch. f. klin. Med., 1909, xcvii, 499.
5. Abderhalden: Ztschr. f. physiol. Chem., 1909, lxii, 136.

SO-CALLED PRECOCIOUS MENSTRUATION COMBINED WITH OCCURRENCE OF MILK IN THE BREASTS OF AN INFANT; A CASE WITH HEREDITARY FEATURES

J. L. VALLELY, M.D., GATUN HOSPITAL, CANAL ZONE

Mrs. V. M. C., an American woman, aged 28, was delivered of a female child on May 30, 1912, at Gatun, Canal Zone. On June 1 there occurred a vaginal discharge of apparently almost pure blood from the infant, which lasted three days and caused no symptoms. When the child was eight days old her breasts were engorged, especially around the nipples, and a whitish fluid exuded, which, under the microscope, showed large numbers of fat globules. This fluid the mother thought necessary to squeeze out every day as the breasts filled up rapidly. The child has no abnormal temperature.

The mother states that all her female children, three in number, had the bloody vaginal discharge, which commenced about the third day after birth and lasted three days, when it disappeared without other symptoms. She also states that in all her four children, including her boy, the occurrence of milk took place in the breasts, commencing when the child was seven or ten days old, lasting a few days, and causing no other symptoms. In all cases there was a considerable quantity of the milky fluid formed every day.

The mother also states that the mother of her husband, Mrs. R. C. C., now living in Mount Vernon, Illinois, who is the mother of seven girls and four boys, told Mrs. V. M. C. shortly after she (Mrs. V. M. C.) was married that all her girls had had the bloody vaginal discharge when two or three days old, and that all her children, both boys and girls, had had the occurrence of milk in the breasts at about the age of seven days, the boys having a larger quantity of the milky formation.

Dr. McGillicuddy, Canal Zone, attended Mrs. V. M. C. when the boy was born.

Without going into the etiology of this case, I would merely state that Halban attributes both these occurrences—the vaginal discharge and the milk—to a common cause, namely, the circulation of some substance probably derived from the placenta. I would also call attention to the feature of inheritance through the children's father.

INTRAHEPATIC HEMORRHAGE OF TRAUMATIC ORIGIN; OPERATION; RECOVERY

GASTON TORRANCE, M.D., BIRMINGHAM, ALA.
Surgeon to St. Vincent's Hospital

A man, 25 years of age, was brought to me with a history of having been injured twelve days previously. At the time of the injury he was standing in the mines by a post near the car track, when a train of cars jumped the track and one of them struck him in the back over the region of the left kidney; the impact of the car threw him against the post. For the first four or five days he suffered pain over the kidney and passed some bloody urine; he then began to have pain over the liver, radiating around the margins of the ribs, and noticed an enlargement in the region of the gall-bladder. He had no rise of temperature and was not confined to bed all of the time.

When admitted to the hospital there was a decided enlargement over the gall-bladder with some tenderness and slight

rigidity; there was a slight tinge of yellow; his temperature was normal; white blood-count was 10,500; the urine showed a trace of albumin, some pus and red blood-cells.

I concluded that he had a very much distended gall-bladder and decided to operate at once. On opening the abdomen I found the gall-bladder normal, but there was a considerable enlargement of the liver between the gall-bladder and the median line, which seemed to be nearer the surface on the under surface of the liver. This history of injury led to the diagnosis of intrahepatic hemorrhage. As the enlargement was so gradual and so recent there was some question as to whether the bleeding had ceased or not. To leave it was to invite infection and abscess formation. After the abdominal cavity was thoroughly protected with gauze packs, a trocar was passed into this bulging part of the under surface of the liver and about a pint of fluid blood was drawn off; the opening was then enlarged enough to admit two fingers for exploration of the cavity. A rubber tube wrapped with gauze and rubber dam was introduced and a gauze drain covered with rubber dam was placed beneath the liver at this point and the omentum was packed around the drains.

The patient was in good condition at the end of the operation and was placed in bed with the foot elevated. He made an uneventful recovery. A few days after operation there was a free flow of bile which continued for about two weeks. For the first week the patient was kept on a very limited diet; then a more liberal diet was allowed, but it was found that this made him quite ill with nausea, etc., probably because of the destruction of liver substance. The patient left the hospital in three weeks with only a small sinus draining mucus and was gradually increasing his diet.

SUSPENDED HEART ACTION IN ACUTE DILATATION; CARDIAC MASSAGE; RECOVERY

ISRAEL BRAM, M.D., PHILADELPHIA

During the past few years much has been written on the subject of cardiac massage in collapse, referring especially to desperate cases of chloroform anesthesia. Keen[1] has detailed two routes for reaching the heart: By resection of the chest-wall directly over the heart, and by manipulation of the heart through the abdomen, either with or without an opening in the diaphragm. König-Maas has reported favorably on massage of the heart over the chest-wall. He places the ball of the thumb of the right hand between the apex-beat and the sternum, and makes quick, sudden compressions of the thoracic wall at the rate of from thirty to one hundred times a minute.

The following case suggests the value of this latter method of cardiac massage:

E. G., a man aged 42, suffered with mitral regurgitation with moderate enlargement of the heart. The disease was of about two years' duration when he came to me, and after one year's treatment the murmur becoming inaudible, and the heart having resumed almost its natural size, he was discharged with due warning against physical or mental strain. On Jan. 15, 1912 (two months afterward), I was hastily summoned to his bedside, where I found him in a state of collapse. Examination revealed a condition of acute cardiac dilatation, with a rapid irregular and at times imperceptible pulse, dyspnea, cyanosis, cold clammy skin, extreme anxiety and restlessness with moments of unconsciousness. Hasty inquiry led to a history of mental excitement (due to business worries) several hours before, and physical exertion for the past few days. I administered a hypodermic injection of digitalin, atropin and strychnin and awaited results. Within three or four minutes he suddenly blanched, respiration ceased, he became pulseless and the heart action became imperceptible. All hopes seemed gone, and it appeared that my sole duty was to pronounce the patient dead. The next moment I was struck with the idea that cardiac massage be tried before giving up. I quickly grasped the precordial region with the right hand, making quick, sudden compression of the thoracic wall and was surprised to feel a slight response in the radial artery of the patient. Thus encouraged, I repeated this procedure at the rate of about fifty times a minute, each resulting in a radial pulsation. An occasional gasp for breath indicated that the respiratory functions were also awakening to assist the patient. I continued the cardiac massage for about thirty minutes when, the radial pulsations becoming slightly stronger, I ventured to omit a cardiac manipulation. In its place there was a spontaneous, very slight radial wave. Soon I ceased this artificial method of circulation and the heart once more began its efforts to functionate. Judicious cardiac stimulation hypodermically was continued, and within five hours the pulse was of fair volume and rhythm. The patient was then given a hypodermic injection of morphin and atropin and allowed to rest for about eight hours. On my return he was markedly improved, and with the aid of careful nursing he made an uneventful recovery, returning to his business in eight weeks.

1714 North Seventh Street.

1. Keen: Proc. Philadelphia County Med. Soc., 1904, xxv.

HERNIA OF DIVERTICULUM OF THE BLADDER

GUSTAV J. BERGENER, M.D., SAN FRANCISCO

Patient.—Section Foreman B. R. K., aged 50 years, consulted me March 15, 1912, and gave a history of a log having rolled over his abdomen twenty years before, from which time his trouble dates. For the last ten years he had had a difficulty in passing urine if he held it for any length of time. He had been operated on four years before examination for inguinal hernia on the same side which was now causing the trouble. The present condition began to manifest itself a month before he came to me, at which time patient stated he was thrown back by a cable. I found the external abdominal ring normal in size and a fluctuating tumor about the size of an English walnut just to the right of ring, noticed only when standing up. I made a diagnosis of hernia and sent the patient to the hospital for operation.

Operation.—The following day, March 16, I made an incision about 11 cm. long through skin and fat over the hernial protrusion and along the course of the cord. I then came on dense cicatricial fascia of the external oblique extending from the external ring to about 7 cm. outward; from there on for about 4 cm. the fibers of the external oblique were separated. The fascia of the external oblique was split up to the point of the internal ring, and the cord was freed from surrounding structures, whereupon a tubular sac of about 5 cm. in length extending along the cord made its appearance. It resembled and folded on itself like a peritoneal sac and could be partly peeled from the cord; therefore I opened it to get in my finger to further loosen it up. After I had tried to free the lower end a straw-colored fluid began to make its appearance. A catheter was introduced through the urethra into the bladder and appeared at the part which had been cut into. The prolongation (diverticulum) of the bladder which had emerged at the point of the external ring consisted of mucous membrane and muscular coats, whereas the hernial protrusion of the bladder was at the external ring of the mucous coat alone. The prolongation of the bladder was barely large enough to admit my index-finger ending at the bladder by the wide mouth. I dissected it out to the external ring, then resected it, and closed it with a double row of running chromic catgut sutures, dropping it below the conjoined tendon and Poupart's ligament. The field of operation was mopped dry and the parts closed, placing the cord below tendon, muscles, and ligament. The fascia of the external oblique was overlapped and sutured with mattress and interrupted sutures of chromic catgut. No drainage was placed in the wound.

Postoperative History.—A retention catheter was placed in the bladder for the first three days and irrigated with saturated solution of boric acid and 1:2,000 solution of silver nitrate. The patient was able to be up on the eleventh day. Cystoscopic examinations of bladder two weeks and six weeks after the operation showed a linear scar of about 2.5 cm. at the left anterolateral wall of the bladder, a few congested spots in the neighborhood of the scar and a slight outward bulging to the left of the scar. There were no calculi and no obstruction to passage of the cystoscope.

To my mind the diverticulum came on after the injury of twenty years ago and the hernia at the time of the accident a month ago. The case, with both diverticulum and hernia of the bladder, is a rather unusual one, because of the manner in which it protruded at the external ring as in direct hernia, and its location along the cord as in indirect hernia.

ANOTHER TRUE HERMAPHRODITE

ROY K. SMITH, A.M., M.D., SEOUL, KOREA

Patient, aged 28, married for seven years, came to the hospital for treatment for hypospadias and the removal of a mass in the right inguinal region. He said he had never had intercourse but had had sexual desire with erections and emissions. Facial hair was entirely lacking (not so remarkable, however, as the Koreans have very scanty beards as a rule) and the expression of the face was as much that of a woman as a man. He had a strong muscular frame, being accustomed to doing ordinary coolie labor. The breasts were as large as those of a young virgin and the hips were broad. Examination revealed a penis about 2 inches long with well-developed glans and corona and loose foreskin and a penile hypospadias with the meatus about 1 inch back of the tip of the glans. The scrotum was normal. On the left side was a normal testicle (?) with epididymis and vas deferens, the spermatic cord rolling easily under the fingers. On the right was a mass which was round and firm like a testicle, slightly larger than that on the left and drawn upward toward the inguinal canal. Above this in the inguinal canal but with a distinct groove between it and the supposed testicle was a firm mass which did not give impulse on coughing and which felt like a hydrocele of the cord under pressure. The light test was not applied. Between the scrotum and anus was a well-marked dimple.

Operation, Feb. 26, 1912, under chloroform and ether anesthesia. Incision was made over the mass, a hernial sac found and opened and a uterus and right tube and ovary delivered. The end of the tube was not patulous but had well-developed fimbriæ and two hydatids of Morgagni. The remains of the round ligament consisting of a small band of fibrous tissue extending into the scrotal connective tissue was ligated and cut. The left tube extended into the pelvis and seemed to be connected to the base of the bladder. There was a band running from the left side of the uterus to the brim of the pelvis on the left side anteriorly, presumably the round ligament. No ovary was found inside the pelvis. The continuation of the uterus downward behind the bladder became a firm hard cord about ½ inch in thickness, supposedly the remains of a vagina, as when traction was made the external dimple was made more prominent. The uterus, ovary and tube were ligated and removed, the stump closed over and dropped into the abdominal cavity and the sac closed as in operation for hernia. The fascia of the external oblique was sewed to Poupart's ligament in its whole length and the skin closed with subcutaneous suture.

Subsequently the hypospadias was operated on by freeing the urethra, placing the opening farther back, cutting the dense hard tissue holding the penis down and bringing in skin flaps from the sides making a penis about 3 inches long.

After hardening in formaldehyd the uterus measured 7.5 cm. long by 5 cm. broad, the right tube 7 cm. long and the ovary 4 cm. by 3.5 cm. The ovary contained several small cysts filled with bloody fluid. Microscopic sections of this organ did not show any graafian follicles, but the stroma was characteristic ovarian connective tissue.

The ultimate proof of this being a case of true hermaphroditism would of course rest on the examination of the gland left in the scrotum. But the history of erections and emissions of spermatic fluid given by the patient and the similarity of the feel of the organ to that of a normal testicle and cord, as well as its being in the proper location for such an organ, make it very probable that the patient was a true hermaphrodite.

Dr. Bolt of Chin Wha College, Pekin, China, and Dr. J. W. Hirst of Severance Hospital, Seoul, assisted at the operation.

Severance Memorial Hospital.

Therapeutics

RADIO-ACTIVE SUBSTANCES IN THERAPY

More than a decade has passed since the introduction of radium into therapeutics, but we are as yet unable to assign a definite position to this or any of the other radioactive metals. At the congress for balneology in Berlin, 1911, Kionka made the assertion that radium had so far not shown any certain success in a single disease. It had removed pain and had given good results in gout, in some cases. Notwithstanding our lack of definite knowledge regarding the therapeutic action of these substances, a large number of preparations are being put on the market and advertised with more or less absurd claims. In view of the fact that the practitioner is being brought face to face with the question whether these preparations are of value, it seems worth while to summarize the results of a discussion of the subject at the German Congress of Internal Medicine,[1] in April of this year.

Considerable attention has been attracted by the claim of Gudzent that uric acid is dissolved and eliminated by solutions containing radium emanations. These claims are opposed by the experimental results of Wessely, who introduced urates into the anterior chamber of the rabbit's eye and then exposed the animal to the action of radium emanation. No evidence of solution or more rapid absorption could be obtained.

P. Lazarus also, on the basis of new experiments, maintained his position that the inhalation of relatively small doses of emanation were without effect on gouty deposits. He holds that the results of Gudzent were due to experimental errors.

Solutions of thorium X have been substituted for the salts of radium and employed by intravenous injections. Having been injected they are supposed to give off emanations similar to those of radium. Falta reports a destruction of leukocytes and reduction of the size of the spleen in leukemia. Plesch has employed this method in the treatment of pernicious anemia. He lays stress on the considerable lowering of blood-pressure, increased consumption of oxygen and an increase of the metabolism, which results in a considerable loss of weight. According to Gudzent, therapeutic effects could be obtained only by very high doses, but owing to the harm which may be done, great caution is necessary.

As a result of the discussion, the conclusion seems to be justified that very large doses of the emanation or of the thorium X solution are necessary to secure therapeutic results, and in these cases the therapeutic results appear to be separated from the toxic action by a very narrow margin. It is evident, therefore, that the use of these substances is still in the experimental stage, that little, if any, effect is to be expected from preparations on the market, especially since they contain only extremely minute doses which, although probably safe, are also probably worthless. It has been remarked editorially[2] that the chief value of radium preparations is in the name. In this connection we may well heed the opinion of Krauss, who expressed himself at the German Congress of Internal Medicine to the effect that in these preparations we are dealing with a biologically powerful agent which needs further study, but the therapeutic results are so far too uncertain, and the danger of the new method too great for it to be proclaimed as a curative remedy.

1. Therap. d. Gegenw., May, 1912.
2. Michigan State Jour. Med., June, 1912, p. 358.

THE CARE OF INFANTS

HISTORICAL DATA

At no time of year is a discussion of the care of infants more important than in the summer. The subject has been overdiscussed and overwritten, but it may not be superfluous to print a few facts and suggestions in this department.

In all early times a mother nursed her own baby, and, when crowding into cities, where filth and lack of sanitation were most in evidence, it was fortunate that she did. In the sixteenth century the professional wet-nurse appeared; for nearly 300 years she was the only substitute for the child's own mother, and the baby still had a fair chance to live. Wet-nursing became a profession, and the physicians more or less carefully selected the wet-nurse. Cow's milk was supposed not to be fit for a baby, and boiled milk was supposed to be injurious. If cow's milk had been used to give to babies in these early years, the death-rate, which was frightful from the filth and contagion, would, from lack of care of the milk, have undoubtedly killed almost every baby that did not nurse. In spite of infants being nursed by their own mothers or wet-nurses, the deaths of young children in the seventeenth century were simply enormous; in fact, it is stated that two-fifths of the total deaths of children in London occurred in those under 2 years of age. Up to 1600, babies were nursed even up to 2 years of age, when gradually the age was reduced to a year and a half, provided that the child had plenty of teeth. In the latter part of the sixteenth century and the beginning of the seventeenth, some mothers began to be less willing to nurse their children, at least for any length of time; the wet-nurse became more and more popular, and the mothers of illegitimate children were often selected. The nurse's child was put into some asylum, or farmed out, and even later these prospective wet-nurses did not care how soon after birth their own child died.

In the beginning of the nineteenth century the child began to be fed cow's and ass's milk; but the improvised bottles and sucking-tubes were so neglected and soon became so filthy that a large number of the children so fed died. It was not until almost the latter third of the last century that proper feeding-bottles were made and proper care of them was understood, and it is only within the last ten years that proper feeding-nipples have been generally used.

It is stated that the first proprietary baby-food was made in 1840. These foods have gradually multiplied until the present time. The wet-nurse has now practically passed out of existence.

The nursing period has gradually been diminished to one year, then to six months, then to three months, and now it is largely a question as to whether the mother will nurse her baby at all.

Cow's milk is supposed to be the proper baby-food when mother's milk fails, or rather, when the mother fails to nurse her baby, and bacterial science, sanitary restrictions and governmental and municipal supervision have all developed marked activities in the preservation and distribution of pure, clean milk. Wonderful formulas have been worked out, based on analysis of human milk, to fit the cow's milk to the baby's needs as modified by age, nutrition and digestive ability. A large number of artificial foods scientifically prepared representing various nutritive abilities are advocated and used as substitutes for cow's milk, or additions to cow's milk. Now what has this done for the infant?

The answer can best be made by a careful study of the classic plea[1] of the president of the American Medical Association, Dr. Abraham Jacobi. Not only medical men but the civilized world should read carefully his arraignment of the neglect of babies by their mothers and his earnest plea for their suckling their own infants. It cannot be amiss here to note a few of the many important facts that he presents and a few of the deductions that he draws.

STATISTICS

The necessity for proper nutrition of the mother and a proper care of her general well-being is shown by the fact that the average weight of babies born in poverty is 10 per cent. less than the weight of those born in better surroundings, and three or four times as many of these babies die when at home as when they are placed in good hospitals. Also, looking toward a proper and good milk secretion, mothers should not be compelled or allowed to rise from a confinement too soon. Their convalescence is not prolonged afterward as would be the convalescence of a mother of the non-working class; therefore greater care is necessary temporarily for her future health.

Dr. Jacobi urgently reminds us that mother's milk from almost every standpoint is the milk for her baby. The nutriment contained in it is generally sufficient, and the amount secreted generally increases, depending on the demand of the baby. Her milk also contains the various elements that are necessary for the baby's early protection. Whatever diseases she has had which have rendered her immune cause her to furnish to the child antitoxins, or a greater number of antibodies, and the child while nursing is less likely to have these diseases than a child that is bottle-fed. This is doubtless the reason for the fact so long observed that infants do not readily acquire certain diseases.

The young baby should not be put to the breast more than once every three hours. After the third month Jacobi thinks it should get along with five meals in twenty-four hours. A truth is much dwelt on, namely, that the baby often cries for water and not for food, and water is what he wants and should have, and that frequently. It is quite probable that the baby's loss of weight in the first two or three days is really due to the loss of water, which is not properly supplied by what he is allowed.

Statistics are tiresome and sometimes fallacious, but the mortality of babies has been so carefully watched and tabulated that the figures are incontrovertible, and these figures show that breast-fed babies have more vitality than those raised on artificial food alone. One set of statistics also shows that of a hundred babies born apparently healthy who died before the end of the first year, three had been nursed for nine months or more; twelve had been nursed from three to nine months; thirty-five for less than three months; and forty-seven had been fed artificially.

Other statistics have shown that nearly ten times as many artificially fed babies die of gastro-intestinal disturbance, atrophy, marasmus and convulsions as do breast-fed babies. The conclusions from these statistics are obvious; the baby should be breast-fed, and by its own mother.

As well presented by Henry Koplik,[2] it is too readily decided by the physician and the family that the mother cannot nurse her baby, and even if nursing is started it

1. Jacobi, A.: The Best Means of Combating Infant Mortality, The Journal A. M. A., June 8, 1912, p. 1735.
2. Koplik, Henry: The Education of the Physician and Postgraduate Study in the Hygiene and Diseases of the Nursing Infant, The Journal A. M. A., Jan. 13, 1912, p. 75.

it stopped for too trivial reasons. If the mother's milk is analyzed, it may seem not to come up to the normal fat content, or may not apparently be sufficient in amount. If the child is given plenty of water, and the nursing is persisted in, soon the amount of nutriment and the quantity of milk will generally become sufficient. If the character and quantity of the milk are positively not sufficient, mixed feeding may be given—in other words, part mother's milk and part artificial nourishment.

Analysis of a thousand infants brought to Koplik in his private practice for consultation concerning their condition, shows that only 10 per cent. were exclusively breast-fed, while 30 per cent. were exclusively bottle-fed. The remaining 60 per cent. were both breast-fed and bottle-fed, although a large majority were not kept at the breast later than the fourth month.

If artificial food must be given, Koplik deplores the fact that so little instruction is given the mother concerning its preparation, and even the milk-depots, which are now many in number, he believes fail of their value unless they also have departments furnishing instruction to mothers as to how to care for the milk and prepare the baby's food. Such instruction, whether given by a physician, by a nurse or by a teacher employed for this purpose should include not only the care of the nutriment, but the care of the baby, namely, its baths, clothing, eyes, ears, mouth and genitals, to say nothing of instruction in the necessity of fresh air and in what manner it shall be given the baby. Instruction in these lines will prevent many unnecessary deaths and a large amount of unnecessary illness.

PROPER FOOD

In discussing the milk food problem for infants it might be well to revert to the splendid symposium that occurred on this subject in the Section on Diseases of Children of the American Medical Association, at its annual meeting in 1908. The conclusions presented by the participants in this discussion are valuable and to the point.

Dr. Effa V. Davis[3] concludes that no working rule is efficient that does not consider the welfare of both the mother and child; that the early secretion from the mother's breasts is useful in sustaining the child, and that babies should be encouraged to nurse from the first day of life in every case possible; that when the milk is abundant a three-hour interval during the day and a longer interval at night is a proper rate of feeding.

Dr. J. Ross Snyder[4] concluded that there was more likelihood of our thoroughly understanding cow's milk and becoming equipped as veterinarians than of understanding human milk and becoming more expert physicians. He suggested the formation of a breast-milk commission to study the physiology and pathology of lactation and secure reliable statistics in relation to the ability of mothers to nurse. Another object of this commission should be to disseminate knowledge relating to the hygiene of nursing, and to initiate a propaganda combating the many superstitions surrounding lactation. He also urged the consideration of the formation of an organized corps of wet-nurses, and the establishment of depots at which bottled human breast-milk could be sold. This is only an extreme plea for the feeding of human milk to the baby.

3. Davis, E. V.: The Quantity and Quality of Breast-Milk During the First Two Weeks of the Puerperium, THE JOURNAL A. M. A., Oct. 10, 1908, p. 1209.
4. Snyder, J. R.: The Breast-Milk Problem, THE JOURNAL A. M. A., Oct. 10, 1908, p. 1212

Dr. G. R. Pisek[5] showed the fallacies of many of the standards held as proper ones for artificial feeding. The simple enumeration of these standards shows the fallacious aim of raising artificial food, and principally cow's milk, above human milk. In other words, these very standard-bearers have done harm in minimizing the necessity for the baby's being nursed by its own mother. A brief enumeration of these standards are: 1. If mother's milk fails, give cow's milk, goat's milk, or ass's milk, but give milk. 2. All milks are composed of the same ingredients, only the difference is in the proportions, and by modifying the composition one milk may be converted into another. 3. The milk of another animal should be converted into a milk as near the human milk proportions as possible. 4. Cow's milk has a tendency to be acid, while human milk is more alkaline; therefore 5 per cent. of lime-water should be added to cow's milk. 5. The difference between human milk and cow's milk is largely due to the different proportions of casein and caseinogen. 6. Human milk is sterile and cow's milk is full of bacteria, hence sterilize the cow's milk. 7. The only standard of the value of the food is whether or not the child gains weight. 8. The infant needs a certain number of calories, depending on his size. Pisek shows the fallacies of following out any one of these rules.

Dr. Jacobi,[6] of New York, also took part in this discussion, and he showed the fallacy and the heresy of the "top-milk feeding," and offered the following conclusion: Artificial food is not equivalent to woman's milk; cow's milk cannot be changed into woman's milk; and to add cow's milk-fat to cow's milk to make it more nutritious is dangerous. Cow's milk-fat and woman's milk-fat are essentially different. Cereal decoctions may at times be necessary to improve the value of artificial milk nourishment.

Dr. Thomas S. Southworth,[7] who concluded this symposium discussion, urged careful analysis of the need of the infant for fats. Too much fat had been advocated in artificial feeding, and now the pendulum was swinging too far the other way; and the only rule was the tolerance of the infant for fat. In other words, the child must be individualized; no rule for the fat content of artificial infant food could be laid down.

From the above, theoretically and practically, there can be no justifiable discussion as to whether a mother should or should not nurse her babe. She should. The only point of discussion is, how long should she nurse him?

(To be continued)

5. Pisek, G. R.: Fallacious Standards Employed in Artificial Infant-Feeding, THE JOURNAL A. M. A., Oct. 10, 1908, p. 1214.
6. Jacobi, A.: The Gospel of Top-Milk, THE JOURNAL A. M. A., Oct. 10, 1908, p. 1216.
7. Southworth, T. S.: High Fat Percentages in Infant-Feeding, THE JOURNAL A. M. A., Oct. 10, 1908, p. 1219.

Eye Symptoms with Deforming Osteitis.—H. Coppez had occasion to note degenerative processes in the macula in four cases of Paget's disease, and the findings were so much alike in all that he thinks the underlying cause of the bone disease must be responsible for them. Yellowish spots were found in and around the macula and they gradually became confluent. The optic nerve was sound but a tendency to cataract was evident in each case; the patients were all between 57 and 61 years old, and their central or paracentral scotoma has persisted to date unmodified by treatment. The Wassermann test is negative in all and all have moderate myopia. His article was published in the last *Journal méd. de Bruxelles*, 1912, xvii, 245.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 DEARBORN AVENUE . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

[For other information see second page following reading matter]

SATURDAY, AUGUST 17, 1912

A NEW METHOD FOR EXAMINATION OF THE CEREBROSPINAL FLUID

It is obvious that every step in the demonstration of simpler biologic methods for ready use as an aid in diagnosis is a step forward. Such an advance seems to have been made by Braun and Husler,[1] who suggest a new method for examination of the spinal fluid. The method is the natural outgrowth of previous work on this subject and is founded on the original observation of Ferrata and Brand, who showed that the portion of complement — the so-called middle piece — contained in the cerebrospinal fluid can be precipitated in various ways in connection with serum globulin. It has also been shown by Weil and Kafka[2] that, whereas both amboceptor and complement are increased in this fluid in meningitis, amboceptor only is increased in general paralysis. It is thus apparent that increase in globulin, which accompanies complement, is diagnostic of meningitis, and that by demonstration of its presence in the fluid in increased amounts, a paralysis may be excluded.

The chief difficulty associated with former methods of demonstrating this increase in complement has been the complexity of the reaction, due either to the large amounts of fluid required or to the unusual chemical and other agents necessary. As the globulin fraction may be precipitated by acids, Braun and Husler have taken advantage of the fact, and have devised the following simple method: Only 1 c.c. of cerebrospinal fluid is required. To this is added, 1 c.c. at a time, a solution of three-hundredth-normal hydrochloric acid. If after 5 c.c. are added no precipitate forms, the reaction is negative. It is desirable that a freshly prepared solution of the acid be used, or else one which has been kept in special bottles which will not dissolve and thus neutralize the acid. The mixture is examined against a dark background and compared with a tube containing only the acid solution.

A fairly large series of cases were examined by this method. In seven cases of tuberculous meningitis, there were six positive results and one positive after three trials. Ten cases of meningitis due to various organisms, as streptococci, meningococci, etc., were all positive, although, as the authors state, these were of little value, as the fluids withdrawn were distinctly turbid. In three paralyses a very faintly positive result was obtained. Nineteen cases of various disorders, as alcoholic neuritis, multiple sclerosis, lues, tabes, etc., simulating meningitis, all gave negative results. Finally in a case of uremia and in a case of brain embolus, very faintly positive results were obtained. In all these cases, the diagnoses were substantiated by various pathologic and bacteriologic studies.

The great advantage of this reaction lies in its simplicity, the small amount of fluid required, and the ready availability of the reagent necessary. The response is fairly prompt and if no turbidity has resulted after two hours, a negative result is recorded. The series of cases reported seems fairly conclusive as to the value of the reaction, but it is of course necessary that further examinations be made and larger statistical reports published before definite judgment can be passed. In the meantime we may say that it has been demonstrated conclusively that the cerebrospinal fluid in meningitis, especially tuberculous, on addition of a weak acid solution, becomes distinctly turbid and may thus be differentiated from normal fluids.

1. Braun and Husler: Deutsch. med. Wchnschr., 1912, xxxviii, 1179.
2. Weil and Kafka: Wien. klin. Wchnschr., 1911, xxiv, 335.

THE COMING OF AGE OF THE BABCOCK TEST

In a circular with this title, Director Russell of the Wisconsin Agricultural Experiment Station[1] has given an interesting summary of the perfection of the Babcock quantitative test for milk-fat and the influence which it has exerted on dairy science and practice throughout the world. Milk and its numerous products play so important a rôle in the economy of the home and in the dietary of the sick that the significance of Professor Babcock's contribution cannot remain unnoticed in the annals of the medical world. The simple, yet highly accurate Babcock method of estimating the fat content of milk and cream finds daily application not only in dozens of analytic laboratories, but likewise in hundreds of creameries, in milk establishments, and even in the office of the busy practitioner of medicine, where a few inexpensive devices enable him to gauge the richness of a breast-milk or a modified milk mixture with facility.

Every pediatrist appreciates what the Babcock test means for the exigencies of practice and successful feeding. To-day, twenty-two years after the introduction of this procedure, which, as Ex-Governor Hoard remarked, has made dairymen more honest than the Bible because it has removed all opportunity for them to profit by any deceit, it is interesting to note that no change has been made in the essential features of the test during all this period. The technic of the operation remains the same as when the details were published by Dr. Babcock in 1890. The stimulus which it has given to scientific

1. Circular of Information, No. 32, University of Wisconsin, Agric. Exper. Sta., Madison, Wis., March, 1912.

dairying, to the standardization and improvement of our milk-supplies, to the possibilities of rational infant-feeding and to what these in turn involve in the direction of the public health is scarcely appreciated by the medical profession. Director Russell has written that the Babcock test frees the dairy farmer from the fetters of past traditions, and removes him from the category of "mossbacks." The influences here referred to have in fact been even more far-reaching.

An additional feature deserves mention: No patent was taken out on either the method or the apparatus required to carry out the Babcock test. There was no copyrighting of a name — no commercialism. In accord with a code of ethics now more generally recognized than at that time, the discoverer, because of his connection with the state experiment station, gave his invention freely to the world. We may gladly join in acknowledging our obligation to the man whom the grateful state of Wisconsin has presented a medal in recognition of "his unselfish dedication of these inventions to the public service."

THE INSANITY PROBLEM

We have repeatedly emphasized the importance of denying the mentally unfit immigrant the privilege of landing in this country.[1] The advocates of a more liberal interpretation of the immigration laws argue that in many instances humanitarian considerations should allow exceptions to the general rule. As we have previously pointed out, this is a dangerous principle to follow. Those who favor lax laws and a still more lax enforcement of the already existing laws seem to lose sight of two well-established facts: First, feeble-mindedness and insanity are on the actual increase among us; second, the chief contributing factor to this increase is the immigrant population. With the increase in insanity the problem of its treatment and prevention becomes more and more complex. The difficulties surrounding the treatment of the actually insane are chiefly those attendant on the procuring of proper legislation and sufficient funds for the managing of our psychopathic institutions.

Though the treatment of insanity is now on a fairly satisfactory basis, the problem of the prevention of mental disorders is becoming daily more acute and perplexing. Theoretically we know how it can be done. It is a question of eugenics. If the unfit can be kept from mating by segregation during the reproductive period, a few generations will suffice to reduce insanity and feeble-mindedness almost to the vanishing-point. Should such a program be carried out, it has been estimated that in fifteen or twenty years the state could be relieved of the burden of further increasing its institutions and that in thirty years most of its properties especially acquired to accommodate all the seriously defective could be sold.[2] While this is theoretically possible, the practical application of such methods would be fraught with great difficulty, and under present social conditions is impossible.

There does seem to be one remedy, however, that should enable us to lessen the increase of the insane in this country, even though we are unable to reduce the number materially. A proper application of the laws debarring mentally defective aliens from entering the United States would cut off one of the chief sources from which the tainted stock is recruited. This statement can be substantiated by abundant statistical evidence. Thus, of the white insane of known nativity enumerated in hospitals in the whole United States on Dec. 31, 1903, it was found that the foreign-born insane contributed almost 15 per cent more than their proportionate share.[3] In New York it has been estimated that one out of every 250 aliens admitted to that state finds his way into the psychopathic wards of one of its institutions during the first year of his arrival.[4]

For the year ending Sept. 30, 1908, out of a total of 5,301 patients admitted to New York State Hospitals for the Insane, 2,548 were ascertained to be of foreign birth.[5] The feeble-minded and backward children in our schools come largely from the immigrant population. In a report prepared for the Public Education Association of New York, in 1911, the histories of 317 mentally defective children were selected at random from thirty-two ungraded classes. All but forty of these children were of foreign parentage.[6] This report merely tends to confirm the estimate[7] that 30 per cent. of the feeble-minded children in the United States are the progeny of aliens or naturalized citizens.[7]

With this greatly excessive prevalence of mental defectiveness among immigrant races, it would seem that all right-thinking physicians should lend their unqualified support to every measure which is intended to increase the efficiency of the medical inspection and examination of immigrants.

URIC ACID

Uric acid has long been a name of mysterious import in medicine—one of those terms which, to the scientific mind, means unsolved problems; to the unthinking individual it often serves as a veil to hide ignorance; for the quack and the nostrum-maker, especially the manufacturer of ethical proprietaries, it has been a money-maker. No one will maintain that the rôle of uric acid

1. Editorial, A Legal Decision on a Medical Question, THE JOURNAL A. M. A., March 23, 1912, p. 861; editorial, Proposed Amendments to Immigration Law, ibid., April 27, 1912, p. 1286.

2. Davenport, Charles Benedict: Heredity in Relation to Eugenics, p. 259.

3. Special Reports of the Census Office, Insane and Feeble-Minded in Institutions, 1908, p. 20.

4. Salmon, T. W.: Insanity and the Immigration Law, New York State Hosp. Bull., November, 1911.

5. Twentieth Annual Report of the N. Y. State Commission in Lunacy, Part I, Appendix, p. 1638.

6. Moore, Anna: Report of the N. Y. State Charities Aid Association, 1911.

7. Editorial, Mental Disorders and Immigration, THE JOURNAL A. M. A., March 30, 1912, p. 938.

in the body has lacked investigators; for the literature abounds in researches which have aimed to elucidate the place of this small but ever-present constituent of the kidney secretion in the physiologic economy and to unravel its occasional pathologic significance.

Among the questions which have arisen in this connection, one of fundamental importance may be formulated as follows: Is uric acid an end-product of metabolism or an intermediary stage in the chemical transformation of the purin compounds in the organism? If uric acid is not a terminal product in the same sense that urea or creatinin are regarded as final products, then it must be assumed that the output of uric acid which is found in the urine from day to day represents only a fraction of that which has been formed in the body; indeed, on this hypothesis it must represent that fragment of the entire circulating uric acid which has escaped destruction. If this were true, it is evident that the amount of uric acid eliminated within any given period is not necessarily an index to that which has been formed within or introduced into the organism. Furthermore, on this basis pathologic accumulations of uric acid might be due to inadequate destruction of the compound quite as well as to impaired elimination.

The untutored observer might assume that it is easy to determine the points at issue. All that is necessary, he would say, is to feed uric acid and ascertain whether it disappears entirely or in part, or whether it can be recovered again in the excretions. If it cannot, the inference would follow that the organism must possess the capacity of destroying uric acid. Experiments along these lines have been undertaken time after time. In some cases uric acid was largely recovered; in others, it practically disappeared. Here we have an illustration of those apparent conflicts of experimental results which always lead to new knowledge when they are followed up for an explanation, yet which are not infrequently held up to the ridicule of the unscientific because of their momentary inconsistency. "Away with experiments; they are the figments of preconceived notions!" remarks the scoffing empiricist.

As a matter of fact, few chapters of physiologic chemistry have received more copious additions in the past decade than that of the purins and their metabolism. Since the discussions on the "Truth and Poetry Concerning Uric Acid" in these columns[1] the wide-spread distribution, the unique specificity and diversity of enzymes which react on the purin compounds have opened up new fields of study in which our American colleagues, notably P. A. Levene and Walter Jones and their co-workers, have performed meritorious service. Perversions of uric acid metabolism were soon conceived to be an expression of inadequate or disturbed enzyme distribution in the pathologic organism — a theory of gout still advocated by various investigators. But the most interesting fact to help explain the endless discrepancies consists in the discovery that the organisms of the familiar experimental animals convert uric acid to allantoin, which represents the end-product of purin metabolism in these species. Now it becomes apparent why uric acid disappeared so readily in them. Man, however, forms the striking exception. Allantoin is never found in the human urine, except in insignificant traces. The human organs, in contrast with those of the other mammals examined, are without any uricolytic power whatever. Here, then, is a marked distinction between man and the ordinary laboratory animals.

Shall we then conclude that uric acid is a terminal product, indestructible when once formed in the human organism? The more recent investigations in which uric acid has been introduced parenterally, i. e., either intravenously or subcutaneously, have shown that it reappears almost quantitatively in the excretions. When, however, uric acids or purins are given by mouth this degree of recovery no longer pertains. Here Sivén[2] has furnished what appears to be an adequate explanation. Ingested purins are easily decomposed in the alimentary canal. There is an abundance of evidence that intestinal bacteria (notably those of the colon group) readily destroy the integrity of the purin molecule. Thus the purins taken by mouth fail in large measure to reach the circulation in their original form and are forever lost for chemical identification in the processes beyond the intestine.

At present, then, it appears probable that the purins which escape putrefactive decomposition are not destroyed in metabolism. In the form of uric acid as a terminal product in man (or allantoin in animals) they escape from the organism. Such conclusions must inevitably direct attention more strongly than ever to the conditions which influence the deposition, retention or elimination of uric acid and facilitate an understanding of the more immediate problems of the gouty diathesis. Meanwhile the outlived theories may be relegated to the rubbish-heap of science.

1. The Journal A. M. A., Jan. 14, 1905, to May 13, 1905, inclusive. See also Mendel: Harvey Lectures, 1905-06, Philadelphia, 1906

INORGANIC SALTS AND PHYSIOLOGIC EQUILIBRIUM

Jacques Loeb has developed the idea that the inorganic salts which play such an important part in our nutritive welfare exert an effective influence by maintaining a sort of physiologic balance in the liquids surrounding our living cells. The fact that salts of more than one element, such as sodium, potassium, calcium and magnesium are all found regularly in the blood and lymph is of more than accidental moment. Many of these ions are toxic by themselves; they can exert influences markedly depressing or stimulating as the case may be. Some of the salts act antagonistically to each other, and the sum total of the various influences playing on our reactive tissues is an equilibrium between toxic and anti-

2. Sivén: Ueber den Purinstoffwechsel des Menschen, Arch. f. d. ges. Physiol. (Pflüger's), 1912, cxlv, 283.

toxic, destructive and protective forces. A physiologically balanced solution, then, is one which contains salts of such kinds and in such proportions that the toxicity which any individual component can exert by itself is completely suppressed. Such is the blood; such should be the perfusion and irrigation fluids which are coming into use.

From the considerations just outlined it is not difficult to understand that any condition which upsets the proportional interrelations of the various salts may lead to physiologic upsets in the organism. The removal of calcium or of sodium, for example, gives opportunity for the preponderant activity of the remaining elements. Such disturbances are not without familiar illustrations. Various forms of tetany have been attributed to a loss of calcium. It is known that injections of calcium salts in such instances lead to an inhibition of the hyperirritability. The specific relation of calcium ions to the permeability of the capillaries and to some of the activities associated with the sympathetic nervous system has been experimentally emphasized by Hans Meyer and his pupils. Calcium salts are currently employed to overcome localized edemas, such as urticaria. Ringer's solution with its additional content of calcium and potassium is an illustration of the attempt to remedy the deficiencies of the inadequate simple common salt solution. Many more illustrations might be cited of the significance of the "balanced antagonism" of the salts in physiology and pathology as well as in therapeutic procedure.

Quite recently the balance of acids and bases in the body and its concern in the maintenance of proper physiologic equilibrium was discussed with reference to its dependence on the composition of the diet.[1] Supplementing these earlier remarks we may now refer to feeding experiments conducted in the Pharmacologic Institute at Vienna on the disposition of the individual bases, or cations, under different conditions of nourishment or in acid intoxication.[2] It was observed that under customary conditions of diet the relative distribution of bases in the output from the body was practically like that in the intake. When the food becomes deficient in an element like calcium, there is a loss of the latter from the body. This is made up, however, by an equivalent retention of other bases such as sodium and magnesium. Similarly, when mineral acids are ingested, the loss of sodium and potassium predominates while the organism strives to conserve the other bases. From these and other facts it follows that the cations can replace each other in equivalent quantities, thereby preserving the reaction or equilibrium of bases and acids in the body despite the withdrawal of some one element. On the other hand, it is more than likely that although the neutrality, so to speak, of the organism is thereby maintained, the upset in the relative proportions of the elements may at times be attended with grave consequences in the light of the views propounded by Loeb. From this standpoint deficiency of calcium in the diet may be objectionable, not so much because of the withdrawal of this base as on account of the serious disturbance in the balanced antagonism or interdependence of all the elements concerned.

It requires no great stretch of the imagination to believe that various trophic disorders, particularly of the skin and peripheral nervous system, are associated with perversions of the salt equilibrium of the organism. Changes in irritability thus evoked may perhaps be referable in some instances to continued errors of diet. One-sided nutrition on a limited narrow dietary furnishes the opportunity for precisely such conditions. Furthermore, the often inexplicable yet undeniable beneficial influences of radical changes in dietary habits or of a regimen at some watering-place with its mineral springs may find their explanation in considerations of the sort advanced above. This chapter in physiologic therapeutics is far from completed.

1. THE JOURNAL A. M. A., July 27, 1912, p. 278.
2. Luithlen, F.: Das gegenseitige Kationen-Verhältniss bei verschiedener Ernährung und bei Säurevergiftung, Arch. f. exper. Pathol. u. Pharmakol., 1912, lxviii, 209.

MINERS' NYSTAGMUS

The careful study of occupational diseases is one of the features of the modern conservation movement coming with the recognition of the economic advantage which attaches to the preservation of health in the industrial population. As an instance of the financial aspects of some of these matters we may cite a recent estimate of the cost of the 1,618 cases of miners' nystagmus in the United Kingdom in 1910. The compensation of these individuals is calculated at over $155,000, a figure which does not take into account the poor earning capacity of the men in the incipient stages of the disease and other profits lost by the employers. Aside from its purely humanitarian or scientific aspects, therefore, successful investigation of such an industrial disease promises to pay a rich return. This statement needs to be brought home to American captains of industry who have as yet made only a beginning in a direction almost certain to lead to a profitable outcome from every point of view.

Among miners nystagmus is an occupational neurosis characterized by an involuntary oscillation of the eyebulbs on fixation. It seems to be confined to the workers in coal-mines and prevents the miner from accurately fixing anything toward which his vision is directed. Such a disturbance of vision evidently must seriously impair the working capacity of an individual who needs to strike accurately with his pick or to match timbers well in the collieries.

There are two prominent views with regard to the etiology of the disease. One of these attributes the nystagmus to the strain of accommodation in the presence of deficient light; the other view associates the disease with the positions taken by the colliers, and

assumes that there is a local myopathy affecting the elevator muscles of the eye. The cause and prevention of miners' nystagmus has been investigated lately by Llewellyn.[1] It is a striking fact that the disease does not occur in the metalliferous mines where safety lamps are not required. In mines where candles can be used or where electric lamps are in operation nystagmus is not found. Now the safety lamp gives much less light, quickly becomes dirty, throws shadows and must be placed out of the reach of the picks. We are apt to overlook the amount of our light which is due to the diffuse reflection from the walls of the room in which we happen to be. In the coal-mine practically all of the light is absorbed; hence the need of satisfactory sources of illumination.

The disease is shown to attack the men who use their eyes in a much larger proportion than the other men. A large proportion of them suffer from errors of refraction. All have weakness of accommodation. Llewellyn regards nystagmus as a disease of great complexity and one in which many factors are at work. The chief of these is strain caused by deficient light. He believes that, as the result of working for long periods in the comparative darkness of the pit, the cells of the retina probably lose their power of producing sufficient pigment for exact vision. This failure occurs sooner in fair blue-eyed people and in those who are subject to a greater eye-strain, owing to errors of refraction. The more frequent occurrence of nystagmus in winter, the loss of visual acuity, the dread of light, are all points in favor of this theory. Another is the oblique position in which the head is held in many cases, whereby an attempt is presumably made by the patient to bring a fresh part of the retina into action. Darkness itself, Llewellyn suggests, is not enough to set up nystagmus.

Here are the preventive measures proposed: No man with refractive errors should be allowed to work underground and no man should be employed without medical examination. Above all, however, comes the improvement in the lighting power of the miner's lamp. If possible a lamp giving a diffused light should be introduced. Improved ventilation also means a better light. The study of the introduction of electric lamps promises to be of great interest in this connection.

1. Llewellyn, T. L.: The Cause and Prevention of Miners' Nystagmus, Proc. Roy. Soc., London, B., 1912, lxxxv, 10.

Current Comment

THE RAT AS A SOURCE OF ECONOMIC AND HEALTH WASTE

Modern industry seeks to economize cost through the scientific and practical study of efficiency methods. This economy is sought by improved processes and machinery, by the elimination of useless handling and waste motion in the performance of routine work, and in other ways. In many lines of business even a superficial observation of the routine of production or distribution at once reveals enormous waste of effort. Preventive medicine is the application of the efficiency idea to health matters. As in the industries, a little study reveals obvious and useless waste, not only on the economic side, but also in the way of the less tangible but more important things — physical pain, discomfort, unhappiness — which make for lessened enjoyment of health and life. These are fundamental things, the avoidance of which inspires all industrial effort. Two sources of economic and health waste are the rat and the fly. Just at present the rat is foremost as a problem in preventive medicine on account of its connection with the threatened entrance of plague into our country, and therein lies one of the shortcomings of our health-efficiency system. The discovery of plague in a neighboring island at once sets in motion the rather clumsy machinery of our health service, local and national, and at an enormous waste of time, money and effort we seek to catch, examine and then kill all the rats on 2,000 miles of coast-line to keep out one disease. It is necessary, of course, and must be done. But how much better it would be to have no rats! It has long been known that rats are a source of tremendous economic waste, not only in seaboard cities about docks and wharfs, but in every portion of the land. Figures are sometimes given of the amount of this waste, which mounts into the millions, but even these figures are only guesses and probably far short of the truth. The principle of modern efficiency would at once demand that no rats should be tolerated; that, in the first place, this enormous economic waste and danger to health should be prevented by swatting the rat, clubbing him, trapping him, poisoning him, asphyxiating him—exterminating him—wherever and whenever he raises his pestiferous head. It should not be left to the now handicapped health organizations of cities and towns and the nation to do this work. The work should be done by the individual property-owner or occupier, who now carelessly, indifferently or ignorantly invites the rat to become an unprofitable but most prolific tenant and guest, paying for his board by subjecting his host to the peril of deadly epidemic diseases. By building the rat out of existence and by waging vigilant continuous warfare against him the public could reduce the rat problem, and consequently the plague problem, to nothingness.

THE PRACTICAL VALUE OF DIRECT TRANSFUSION OF BLOOD

The time is not yet at hand when final statements as to the definite indications for direct transfusion of blood can be made. In secondary anemia, such as results from traumatic hemorrhage, from post-partum hemorrhage, and from other conditions, it would often be desirable to transfuse after the bleeding has been controlled, if the technic were as simple as, for instance, the intravenous injection of salt solution. Unfortunately, we are not yet in possession of a technic for transfusion which is easily mastered; the operation is not without considerable difficulty—even some danger to the patient. It should be remembered always that the selection of a donor is a most important matter, requiring special care. All this does not mean that recent

accomplishments in this field are insignificant, but rather that the ultimate goal desired is not attained. With the present technic, probably only three classes of patients with secondary anemia should be considered as fit subjects for transfusion: those who have bled so profusely that their life is in jeopardy; those who have lost much blood and are suffering from uncontrollable hemorrhage, and those who require some operation or other while in a state of very grave anemia. The practice of transfusion of patients suffering from moderately severe hemorrhage such as may be associated with extrauterine pregnancy is not generally commendable because it leads to a routine performance of transfusion, when in reality control of the bleeding is all that is necessary. When transfusion becomes a simpler matter than now, many patients no doubt may be transfused with benefit, but at present the operation with the selection of the donor is so complicated as to be employed only after careful deliberation. In other kinds of cases, such as pernicious anemia, Hodgkin's disease, and chronic infections with a hopeless outlook, e. g., tuberculosis with advanced anemia, evidence is still wanting that transfusion is of any real benefit. At the most, the improvement resulting has been simply temporary. Perhaps the outlook in tuberculosis is a little more favorable; here the content of the blood in complement is low and as transfusion tends to increase complement, theoretically it would be beneficial. The outcome of repeated transfusions in tuberculosis and other similar diseases may be awaited with interest.

THE THERAPEUTIC USE OF BLOOD

An interesting development in minor surgery is the use of blood to stop hemorrhage. For this purpose blood may be drawn from a normal person and injected subcutaneously at once or, if preferred, a sterile flask with a coiled wire may be used to receive the blood, which is then defibrinated so as to be ready for injection. If haste is not required a simple procedure is to allow the blood to stand in the ice-box in a sterile bottle, the serum being used for injection as required. From 10 to 20 c.c. may be injected, and the dose repeated several times if desirable. As substitutes for human serum, beef-serum or that of the horse or rabbit may be used. The possibility of anaphylactic reactions from the use of foreign serums makes the latter somewhat less desirable. Blood-serum is also efficacious when administered locally, and applied to oozing surfaces it possesses marked hemostatic properties. Good results follow injections of blood or serum in hemorrhage of the new-born, except when life is endangered from exsanguination; in these cases direct transfusion is indicated. In hereditary hemophilia injection of serum is useful, probably because it causes a stimulation of the bone-marrow, resulting in an increase of thrombokinase, which both Sahli and Morawitz find is lacking in hemophilics. The treatment of the toxemias of pregnancy with serum of normal pregnant women also promises well, and even now many cases have been recorded in which the treatment has given satisfactory results. The mode of action in these cases is unknown.

MEDICAL MEETINGS AS ADVERTISING MEDIUMS

A most valuable advertising asset for a nostrum exploited to the medical profession is an "original paper" read before a medical society. Some time ago this method was very common in this country; it was not at all unusual for a physician to present before a society a paper that was a veiled puff for some "ethical" proprietary. Thus not a few of what became popular nostrums were introduced to the medical profession. Happily, in recent years this method of advertising has gone out of vogue on this side the Atlantic, and few physicians would have the courage at the present day to do what was a common thing less than a decade ago. While conditions have improved here, however, they seem to have been growing worse in Germany, although apparently a halt will be called there before long. A year ago[1] we commented on the newspaper notoriety that Dioradin was receiving, and said that Bernheim and Dieupart, of Paris, seemed to have been selected by Szendeffy, of Budapest, the originator of Dioradin, to deliver the news of the wonderful discovery (?) to the public and, incidentally, to the medical profession. Bernheim recently read a paper on his favorite subject before the German Society of Internal Medicine. Later this paper was reprinted and distributed by the promoters of Dicradin; but included in the reprint were testimonials which originally were not a part of the paper. Of course the pamphlet bore the imprint of the society, which seemed to lend official sanction to the testimonials. For this reason a protest was issued[2] by the presiding officer of the society, as follows:

GERMAN CONGRESS FOR INTERNAL MEDICINE

The German Dioradin Company sends out Pamphlet 4 of its publications with the imprint "German Congress for Internal Medicine, April 16 to 19." In this pamphlet is reprinted the contribution presented at the congress, April 18, by Dr. Bernheim of Paris along with a series of testimonials for Dioradin which were not given at the congress. The board of directors of the German Congress for Internal Medicine has not authorized this publication and protests against the misuse of its name.

I. A. PENZOLDT, Presiding Officer (*derzeitige Vorsitzender*).

This is encouraging; it is another evidence that the German medical profession is awakening to the wretched conditions which in recent years have developed in that country in connection with the exploitation of proprietary medicines.

NOBLESSE OBLIGE—A WISCONSIN BIRTHRIGHT

Within the past few years Wisconsin has come to be known as one of the progressive states whose social and political consciousness has been awakened. It belongs to that group of commonwealths, few in number, but purposeful and aggressive in action, which to-day are making American history. With one of the best state universities in the country and a public school system of which it may well be proud, its average of intelligence is high. What has been said of the state in general applies with equal force to the medical profession in that state. There is to-day within its borders a class of

1. THE JOURNAL A. M. A., Aug. 19, 1911, p. 659.
2. Therap. Monatsh., June, 1912, p. 468.

physicians second to none. But—. The progressive American physician has made strenuous efforts within the past decade to release his profession from the thraldom of secret nostrums. He has done this by insisting that his medical journal shall cease to be an organ subsidized by the proprietary medicine interests and shall become, what it was intended to be, a publication in which the interests of scientific medicine and of the physician are the first consideration. This has been accomplished in a large number of the states by the organized profession publishing its own journal. For some years the state medical society of Wisconsin did not own its own journal. During that period there was possibly some excuse for a lack of close censorship over the class of advertising that appeared. Now, however, the Wisconsin State Medical Society owns and publishes its official organ and the members of the profession of that state are responsible for it and for the character of its advertisements. It is therefore with surprise and regret that one finds in the pages of the *Wisconsin Medical Journal* advertisements of some of the worst nostrums with which American medicine is afflicted. Here are a few preparations advertised in that journal: Kutnow's Powder, Waterbury's Compound, Pinozyme, Hagee's Cordial, Ergoapiol, Campho-Phenique, Bovinine, Dioviburnia, Epilepsigen, Tongaline, Neurosine. That the official organ of the state medical society of Wisconsin should give publicity to secret nostrums and encourage their use among its members, and that the state medical society itself should receive an income from such a source, is not only a discredit to the organized profession of that state, but comes as a shock to those — they are many — who expect better things from Wisconsin.

MODERN METHODS IN PROMOTING THE HYGIENE CONGRESS

Those responsible for the American end of the International Congress on Hygiene and Demography are using modern methods in advertising it. They are favored in having the backing of the government, so that their mail goes out under government envelopes postage-free, and the committee has good, live ideas in putting the congress before the profession. The circulars are well written, attractively printed and, in the language of the day, have a "punch" back of them. One of these notices begins: "That leadership which is generally accorded to American physicians, in matters of public health, now confronts the most significant challenge ever offered in the history of American medicine." This sentence introduces a cogent appeal to physicians to become active members of the congress in order "that the medical membership of the forthcoming congress shall surpass the score made by French, or German, or British physicians, at previous congresses. In short, we shall accept the challenge. Let us make it unanimous." On a slip in the same communication, delicately tinted and daintily printed, we find the following: "Perhaps you are a member already. Good for you! Your friend and you will make two. Please wake him up." The committee has a writer who knows how to prepare good literature. When the congress is over, he ought to be able to secure a good position with some publicity concern. His present efforts ought to meet the success they deserve, and we should like to call attention to the fact that membership in this congress costs only five dollars, and would be cheap at twice this amount. Let us make this congress a success so far as medical members are concerned. Do your part and write at once to Dr. John S. Fulton, Secretary-General, Senate Annex, Washington, D. C.

WHOLESALE GEOGRAPHIC SURGERY

What might be called a capital operation is the proposed cutting of a canal from the Mediterranean to the Desert of Sahara, converting a considerable portion of the latter into an inland sea. Now that the Panama Canal is almost completed and the edge of its novelty has been somewhat dulled in the public thought, France steps forward to propose a new, stupendous engineering feat.[1] There are two facts that make this a feasible proposition. The first is that part of the desert is below the sea-level and the second that the canal to admit the waters of the Mediterranean would have to be but fifty miles long. The results need but to be hinted at: an inland sea for large ships, tropical verdure to replace barren desert, agricultural possibilities to support nations of people and great modification of the climate. Since the parts of the Sahara which are below the sea-level are broken up by higher spots, this inland sea would be filled with islands and promontories. The proposal is an ingenious one, full of great possibilities for benefit to Africa.

ANOTHER MARTYR TO SCIENTIFIC MEDICINE

Dr. T. B. McClintic, of the United States Public Health Service, died in Washington, August 13, of Rocky Mountain spotted fever, contracted while investigating the disease in Montana. Last year Dr. McClintic spent about three months in Montana studying the disease under the auspices of the Montana state government, and this year his services were again requested. He went there last May. As soon as he realized that he had contracted the disease he started for Washington; he died within twenty-four hours after his arrival. It will be remembered that Rocky Mountain spotted fever is transmitted by a tick, *Dermacentor venustus*. As it prevails in Montana, the disease is peculiarly fatal, the mortality being between 90 and 100 per cent. Dr. McClintic was one of the leading officers of the United States Public Health and Marine-Hospital Service, and has done important work in the investigation of germicides and antiseptics, and in other scientific research work. He was regarded as the leading authority on the disease of which he died, and as a man of great promise. Dr. McClintic was 39 years of age, and had been married barely a year. Thus is inscribed one more name on the roll of the heroes and martyrs of scientific medicine.

1. Thompson, G. A.: A Plan for Converting the Sahara Desert Into a Sea, Scient. Am., Aug 12, 1912, p. 114.

Medical News

COLORADO

Teaching Ophthalmology.—The graduate course in ophthalmology, in the University of Colorado, the first of its kind given in this country, was completed August 3. The ten students who regularly entered the course represented nine different medical colleges. Nearly all had been engaged in ophthalmic practice exclusively, at different points, varying from Harrisburg, Pa., to Delta, Colo. Four of them passed the examination, and, on complying with other requirements, will become eligible for the degree of doctor of ophthalmology. These four are Drs. George F. Libby, William H. Crisp and Daniel G. Monaghan, Denver, and Dr. Samuel Z. Shope, Harrisburg, Pa.

DELAWARE

Maternity Department of Hospital Completed.—The Maternity Ward recently completed in the Delaware Hospital, Wilmington, was opened for public inspection, July 25. The ward will accommodate fifteen patients and has a modern equipment.

Opposes Liberation of Tuberculous Prisoners.—The Antituberculosis Society of Delaware, through its president, has entered an official protest against the liberation from the New Castle County Workhouse of prisoners in the last stage of consumption, on the ground of the danger therefrom to the prisoners' families and the public in general.

Personal.—Dr. H. R. Burton has been elected president of the Lewes Board of Health.——Dr. John Ball, Hockessin, is confined to his home on account of a nervous breakdown.——Dr. Josephus A. Wright, Delmar, has been appointed superintendent of the Sydenham Hospital, Baltimore.——Dr. A. J. Fleetwood, Laurel, while making a professional call, was attacked by a highwayman and robbed of his pocketbook and watch.——Dr. George McElfatrick, Wilmington, has been appointed captain, M. C., N. G. Del., and assigned to the First Infantry.

DISTRICT OF COLUMBIA

Motor Ambulance Presented to Hospital.—A new motor ambulance has been presented to the Emergency Hospital by Mrs. E. T. Stotesbury. The machine is thoroughly equipped with first-aid appliances and is capable of a speed of twenty-five miles an hour.

Personal.—Dr. Joseph G. B. Bullock, who was operated on for appendicitis at Georgetown University Hospital recently, has recovered and returned to his work in the medical department of the Pension Bureau.——Dr. S. Boyce Pole has been appointed physician to the poor of the district succeeding Dr. J. R. Tubman, retired.——Dr. William C. Fowler has been reappointed inspector in charge of contagious disease service.——Dr. John L. Norris has been appointed deputy health officer, vice Dr. H. F. Sawtelle, resigned.

FLORIDA

New Building for Health Department.—The Health Department of Jacksonville has moved into the new City Building. The new quarters provide offices for the city health officer and his clerical force and two well-equipped laboratories.

State Society Meeting.—At the thirty-ninth annual meeting of the Florida Medical Association, held in Tampa under the presidency of Dr. Albert H. Freeman, Starke, Dr. Raymond B. Turck, Jacksonville, delivered the annual oration and the following officers were elected: president, Dr. J. S. Helms, Tampa; vice-presidents, Drs. G. E. Henson, Crescent City, I. G. Dupuis, Lemon City, and M. L. Crum, Bowling Green; delegate to the American Medical Association, Dr. J. Y. Porter, Key West; alternate, Dr. L. A. Bize, Tampa, and councilors, fifth district, Dr. H. C. Bozier, Ocala; sixth district, Dr. U. S. Bird, Tampa; ninth district, Dr. J. S. McGeachy, Chipley; tenth district, W. E. Wright, Wauchula, and eleventh district, Dr. E. E. Rollins, Fort Pierce.

GEORGIA

Clinic Opened.—The Morris Hirsch free clinic conducted by the Jewish Alliance was opened at 90 Capital Avenue, Atlanta, July 2. A milk station has been established in connection with the clinic.

New Medical Society.—The Twelfth District Medical Society was organized in Dublin, August 2 and the following officers were elected: president, Dr. J. L. Weddington, Dublin; Drs. L. L. Moye, Vidalia and J. E. New, Dexter, vice-presidents, and Dr. C. E. Riner, Summit, secretary-treasurer.

Personal.—Dr. W. L. Funkhouser has been elected inspector of the Public Schools of Rome.——Dr. J. L. Selman, Douglasville, was thrown from his buggy, July 28 and seriously injured.——Dr. Everet Daniel has resigned as a member of the Board of Health of Moultrie. The civilian members of the board resigned at the same time.——Drs. H. W. Hesse, Raymond V. Harris and Ben. H. Gibson were bruised and cut when the automobile in which they were returning from the meeting of the Savannah Medical Society, July 10, collided with a trolley car.——Dr. F. S. Rogers, Coleman, had both legs fractured in a collision between his automobile and an engine of the Georgia Central Railway, July 4.——Dr. Andrew F. Quillian has been appointed resident physician at the Atlanta Contagious Disease and Detention Hospital, vice Dr. O. B. Bush, resigned to enter private practice.——Dr. William B. Crawford has succeeded Dr. M. F. Dunn as president of the staff of St. Joseph's Hospital, Savannah.

ILLINOIS

New Officers.—Ogle County Medical Society at Forreston, July 17: president, Dr. Samuel Houston, Polo; secretary, Dr. J. F. Kretsinger, Leaf River.

The Systematizing of Charity Medical Work.—Dr. Pietrowicz has announced the following as his aids in the work which he has undertaken of systematizing the charity medical work of the county: Dr. Jacob Frank, president of the Chicago Medical Society, Dr. Heman Spalding of the Department of Health, Dr. Henry B. Favill and Dr. A. C. Cotton.

Reorganization of County Relief Station.—Dr. Stephen R. Pietrowicz, formerly superintendent of the Cook County Institutions, Dunning, has agreed to serve Cook County free of charge in connection with the Department of Outdoor Relief. He will investigate the charges regarding favoritism, and will make the assignments of cases to members of the medical staff.

Hospital Notes.—The proposition to bond Sterling for $25,000 for a public hospital was carried August 7, by a vote of three to one.——More than $1,000 was realized for St. Francis Hospital, Evanston, by an entertainment given for its benefit, July 30.——Henry County Infirmary near Cambridge was destroyed by fire July 20. None of the inmates was seriously injured.

Madison County Secures Hospital.—The State Board of Administration, on August 6, decided to locate the new state hospital for the insane authorized by the last General Assembly, in Madison County, near Alton. Five hundred thousand dollars has been appropriated for the purchase of not less than one thousand acres of land and the preparation of plans, and seventy-eight sites have thus far been offered for selection.

Personal.—Dr. George F. Butler, Wilmette, county physician of Cook County, has been elected chairman of the committee to investigate the examination of members of the Cook County Hospital attending staff.——Dr. J. H. Bacon, Peoria, started for Europe, August 5.——Dr. A. C. Eakin, Rockford, was operated on for appendicitis in St. Anthony's Hospital in that city, July 29.——Dr. C. L. Tegtmeier, Freeburg, was thrown from his buggy recently and fractured his leg.——Dr. I. S. Fremmel has been transferred from the Elgin State Hospital to the new Chicago State Hospital.

Chicago

New Nurses' Home.—A six-story fireproof nurses' home is to be erected for the nurses of Presbyterian Hospital, which is to be connected with the hospital by a tunnel. The home will be equipped with rooms for 175 nurses and will have a roof garden.

Personal.—Dr. Thomas S. Crowe has started for Europe.——Dr. and Mrs. John B. Murphy and family sailed from Europe, August 9.——Dr. Antonio Lagorio has been elected vice-president of the board of directors of the Chicago Public Library.——Drs. Joseph H. Capps and George F. Butler have been added to the Citizens' Milk Committee.

Successful Candidates in the County Hospital Examination.—Of the 290 who took the examination for membership on the Cook County Hospital attending staff, 79 passed the test. The leaders in the various departments were as follows: surgery, Dr. Daniel N. Eisendrath; medicine, Dr. Joseph A. Capps; dermatology, Dr. K. A. Zurawski; dental surgery, Dr. W. H. C. Logan and diseases of children, Dr. Henry W. Cheney.

In Memory of Freer.—The Bureau of Science of the Philippine Government has adopted resolutions in memory of Dr. Paul Casper Freer, Chicago, director of scientific work in the bureau, who died last April. The resolutions express the sense of his associates that "the Bureau of Science has suffered a

very great loss and that the cause of science in these islands has been deprived of one of its most zealous and conscientious advocates."

Memorial Association Formed.—Women physicians of Chicago have organized a memorial association. The memorial is to be in the form of lectureships in the different medical schools. The holders of these positions will endeavor to keep the fame of notable dead women physicians before the medical fraternity. Two women who will be especially honored are Dr. Sarah Hackett Stevenson and Marie J. Mergler. Drs. Lucy Waite, Eliza H. Root, Sara C. Buckley and Marie L. White are in charge of the movement.

INDIANA

Hospital for Gary.—In six days the citizens of Gary collected $36,655 for the Mercy Hospital fund, or $6,000 more than was expected.

Psychologic Laboratory in Reformatory.—Dr. David C. Peyton, general superintendent of the Indiana State Reformatory, Jeffersonville, has announced the establishment of a laboratory of experimental psychology. Dr. Peyton's plans include the conversion of reformatories into the equivalent of training schools for unfortunates whose deficiencies have betrayed them into crime.

Personal.—Dr. Lewis Burckhardt and family, Indianapolis, sailed for Europe August 15.——Dr. A. F. Gugsell has been appointed postmaster of Jasper.——Dr. Rebecca Parish, Indianapolis, who has recently been in charge of the Mary Johnstone Hospital, Manila, P. I., has returned to the United States on a leave of absence of a year.——Dr. E. A. Crull, Fort Wayne, who has been seriously ill with blood-poisoning, is reported to be recovering.——Dr. E. A. Sturm, Jasper, has been elected secretary of the Dubois County Medical Society, vice Dr. C. R. Ramsbrok, Huntingburg, deceased.

KANSAS

Free Clinic—A free clinic for the poor is soon to be opened by the Associated Charities in Kansas City. The dispensary is located in the rooms of the Associated Charities and will be open for two hours each day.

Personal.—Dr. J. P. Kaster has been elected chief surgeon of the Atchison, Topeka and Santa Fe Hospital Association. ——Dr. G. W. Allaman, Atchison, has been elected head physician of the Fraternal Woodmen.——Dr. F. L. Williams, Wichita, was seriously scalded while sterilizing instruments, July 26. ——Dr. Leo E. Haughey, Topeka, has resigned as medical lecturer for the Kansas State Board of Health and has settled in Courtland.——Dr. B. J. Patterson, Rexford, sustained serious injuries in a collison between his motorcycle and an automobile, August 5.

University Notes.—Dr. John Sundvall, Baltimore, has been appointed professor of anatomy in the University of Kansas, Rosedale.——Lindsey S. Milne, M. B., Russell Sage Foundation, has been appointed professor of medicine in the University. ——The estate of the late Dr. J. E. Robinson, first governor of the state, which by his will was left to the University on the death of his wife, has become available. The value of the estate is estimated to be from $80,000 to $120,000. The funds derived from this source are to be used, in accordance with the wishes of Dr. Robinson, in the development of the medical school.

KENTUCKY

Fire in Sanatorium.—Fire in the Martinsville Sanatorium, July 25, caused a loss of about $3,000.

Change of Date of Meeting.—The secretary of the Kentucky State Medical Association announces that the annual meeting will be held in Louisville, October 29-31, instead of October 12-14 as previously announced.

Must Itemize Accounts.—Acting on the advice of the Attorney General, the State Auditor declined to issue a warrant for $2,500 in favor of the State Board of Health and has advised the secretary that in future all requisitions must be accompanied by duplicate bills showing the purpose for which the money is to be used. Heretofore, the Board of Health has drawn its annual appropriation by monthly installments.

LOUISIANA

Hospital Permit Granted.—The committee on police and public buildings of the New Orleans City Council has taken favorable action on the application of Dr. D. S. Brosnan to conduct a private hospital at Prytania and Clio Streets.

Money to Fight Diseases.—At a meeting of the City Council of Shreveport, July 31, $11,500 was appropriated for the uses of the City Board of Health.——The Louisiana Antituberculosis League received about $4,000 as the result of its recent subscription day collections.

Higher Examination Fee.—Dr. A. B. Brown, secretary of the Louisiana State Board of Medical Examiners, announces that an amendment has recently been secured through the medical practice act, increasing the fee for license examinations from $10 to $25. This increase is said to have been necessary in order properly to provide for the expenses of the board.

Personal.—Dr. G. Farrar Patton, New Orleans, sailed for Europe, June 14.——Dr. A. R. Carter, Roseland, suffered painful injuries of the kneecap while getting into his buggy, July 31.——Dr. D. D. Mims, Crowley, fractured his arm and suffered other serious injuries while jumping from a freight train in motion, July 24.——Dr. R. W. Seay, Grand Isle, was shot through the left arm from ambush, July 12.——Dr. G. C. Chandler, recently appointed a member of the Board of Health of Shreveport, has been elected president of the Board and city health officer, vice Dr. A. A. Herold, resigned, and elected coroner.——Dr. J. T. Bringier, Burnside, has been appointed a member of the Board of Control of the Lepers' Home.

MARYLAND

State Society to Meet.—The semi-annual meeting of the Medical and Chirurgical Faculty of Maryland will be held in Cambridge, Eastern Shore, during the week of October 20, and in conjunction with it, there will be a public health conference and exhibit.

Personal.—Dr. Joseph H. Branham entertained the Anne Arundel County Medical Society August 13, at his country home "Brangwyn" on the Severn River.——The automobile of Dr. James M. Urie, Kennedyville, was overturned, August 4, and Dr. Urie and his three children were injured.

New Sanatorium Building Opened.—The new building of the Maryland Tuberculosis Sanatorium, Sabillasville, was opened August 1. The building has been erected at a cost of about $100,000, is of frame construction, 540 feet in length, and will very nearly double the capacity of the institution. It contains one hundred private rooms and about one hundred ward beds. The building is provided with inclines which will be used as fire escapes. Its water supply is abundant and is derived from artesian wells.

Baltimore

New Office Building for Physicians.—The Whitridge property at Charles and Read Streets is now being converted into an apartment and physicians' office building and will be known as the Ellicott Building.

Personal.—Dr. J. J. Mills has started for Europe.——Dr. Theodore Cooke is making a four-story addition to his residence and is converting it into an apartment house.——Dr. Joseph F. Tearney has been appointed chief medical examiner of the Baltimore and Ohio System, succeeding the late Dr. Summerfield B. Bond.——Dr. R. R. Snowden has succeeded Dr. Walter A. Baetjer as resident physician at the Baltimore City Hospital.——Dr. William R. Stokes, city bacteriologist, is ill at Mercy Hospital with malaria.——Dr. Harvey Cushing has returned from Europe.——Dr. Chadbourne Andrews, resident physician at the Hebrew Hospital, will be succeeded in that position September 1 by Dr. Eugene B. Wright.——Dr. Frederick H. Baetjer, roentgenologist of Johns Hopkins Hospital, is confined in that institution suffering from an infection of the right hand. Dr. Baetjer had already suffered the loss of four fingers of the right hand on account of *x*-ray burns but it is hoped that the remaining finger will be saved.

MASSACHUSETTS

Raise Money for Sanatorium.—A county fair was held at the Montserrat club for the benefit of the Children's Island Sanatorium in Marblehead Harbor, at which about $7,000 was raised for the institution.

Personal.—Dr. Harry S. Wagner, Westfield, has been appointed president of the Hartford County (Conn.) Tuberculosis Home, Newington Heights.——Dr. Francis X. Mahoney, Dorchester, Boston, has been elected chairman of the Board of Health, vice Dr. Samuel H. Durgin.——Dr. James Gregory Mumford has been appointed physician in chief of the Clifton Sanatorium and Hospital, Clifton Springs, N. Y.——Dr. Harvey Cushing, Baltimore, recently appointed surgeon in chief of the Peter Brent Brigham Hospital, Boston, has purchased a residence on Walnut Street, Brookline.

MINNESOTA

New Officers.—Wabasha County Medical Society at Lake City, July 11: president, Dr. D. P. Dempsey, Kellogg; secretary-treasurer, Dr. W. F. Wilson, Lake City.

Milk Standards.—The State Board of Health has set a state-wide milk standard. Milk, to pass inspection, from this time on, must contain less than 100,000 bacteria per cubic centimeter.

Missionary Work in Medical School Inspections.—Dr. Ernest B. Hoag of the University of California has been engaged by the State Board of Health to supervise the medical school inspection work of the state. He will remain a year in the state preaching and teaching the gospel of medical school inspection.

Trachoma Report.—The committee appointed by the State Board of Health to examine into and report on the trachoma situation in Northern Minnesota and on the White Earth Indian Reservation has recommended the establishment of Indian villages, the segregation of the afflicted Indians and the maintenance of a hospital in each village. Active work in the extermination of the disease will begin as soon as the schools on the reservations are opened.

Personal.—Dr. Herbert W. Davis, St. Paul, sailed for Europe, July 6.——Dr. Leverett Dale Bristol, St. Paul, will retire from practice to accept a position as head of the department of bacteriology in the medical department of Syracuse (N. Y.) University.——Dr. William H. Rumpf, Faribault, has been commissioned as lieutenant M. C., N. G. Minn. and assigned to duty with the Second Infantry.——Dr. A. J. Chesley, Minneapolis, has been elected state epidemiologist by the State Board of Health, vice Dr. Hibbert W. Hill.

Hospital Notes.—Drs. W. G. Dolan and James Fleming, Cloquet, have purchased Barclay Hospital, Cloquet, which will hereafter be known as the Cloquet Hospital.——The State Inebriate Hospital, Wilmar, will be opened late this month or early in September. Dr. H. A. Tomlinson, superintendent of the State Insane Hospital, St. Peter, is to be in charge of the new institution.——Otter Tail County has decided to erect a county tuberculosis sanatorium, to cost $10,000. The building is to be frame with a cement foundation and two stories in height with sleeping porches and solariums.——Members of the Ramsey County Board of Control have advocated the erection of a tuberculosis hospital on the grounds of the City and County Hospital to cost $75,000.——The new tuberculosis sanatorium at Nopeming has just been opened. Dr. J. L. Laird is superintendent of the institution, which has been erected at a cost of about $50,000. About twenty patients are being cared for at the present time and the institution will accommodate about thirty more.——Itasca County has voted $20,000 for a county tuberculosis hospital.

MISSOURI

New Clinic in Little Italy.—A permanent clinic will be held by the Board of Health of Kansas City in the district known as "Little Italy" where a temporary clinic is now in operation. The present clinic is only for babies and children but in the permanent clinic persons of all ages will be treated.

Serum Farm and Laboratory for Kansas City.—Dr. Frank J. Hall, Kansas City, has decided to establish a serum farm near the city and a laboratory in a down-town building, at which antitoxins and serums of various kinds will be manufactured. Drs. Abraham Sophian, Elliott R. Alexander and Mr. Thomas Deaken, all of New York City, are associated with Dr. Hall in his enterprise.

Disease Prevention Bureau.—A bureau of information and preventive medicine for the free use of Missourians is to be established at the University of Missouri, Columbia, with Dr. W. J. Calvert at its head. The chief work of the bureau will be to spread information regarding the prevention of disease. Free pathologic examinations will be made at its laboratory and free examinations and aid in the checking of disease will be furnished.

Hospital News.—A new hospital is to be erected in Springfield to cost $25,000. Dr. W. P. Patterson is president of the Hospital Association.——Kansas City is said to be in the peculiar predicament of having an isolation hospital for communicable diseases ready for occupancy, but without funds for its furnishing and equipment.——The treasurer of the Fulton State Hospital in his report for the six months ended July 1, states that it has cost eighty-one counties and the city of St. Louis $63,926.74 to pay for the maintenance of their insane wards at the local institution during that period.

St. Louis

Hospital Notes.—The Alexian Brothers, St. Louis Maternity and Christian hospitals have been issued licenses by the Board of Health.——A Jewish Kosher Hospital is planned for St. Louis. At a meeting, July 20, $5,287 were subscribed for the building and $600 toward a maintenance fund.——A building permit has been issued for the new Barnes Hospital on Kingshighway. The permit is for work to cost $70,000 and authorizes the erection of a three-story building.——The new chapel of Mount St. Rose Hospital was dedicated with formal ceremonies by Archbishop Glennon and a bazaar was held on the grounds to raise funds for the hospital, which is a sanatorium for tuberculosis.

NEW YORK

Sanatorium Opened.—The Schenectady County Tuberculosis Sanatorium, Glen Ridge, was formally opened August 3. The sanatorium has been erected at a cost of about $60,000, and will accommodate about forty patients.

Personal.—Dr. I. M. Shapero, Syracuse, has returned from Europe.——Dr. F. S. Honsinger, Syracuse, who has been confined to his home for five months as the result of a fracture of the hip, has recovered and resumed practice.

New Building for Sanatorium.—Plans have been filed for an addition to Dr. Corden T. Graham's Sanatorium, Rochester, to cost $65,000. The building is to be of concrete, brick and hollow tile, two stories in height, and will have thirty-three rooms and a solarium.

Trachoma in an Albany School.—There is an epidemic of trachoma in the State Training School for Girls at Albany, which has been in progress since last March. Thus far there have been 120 cases. It is probable that the disease was introduced by a girl from New York who had been treated for the disease for a year previous to her admission to this school.

New York City

Personal.—Dr. C. E. Royce, New York City, has been elected pathologist of the University Hospital, Iowa City.——Dr. Frazer, ambulance surgeon of St. Catherine's Hospital, Brooklyn, who was seriously injured in a collision between the hospital ambulance on which he was riding and an electric car, is reported to be improving.——Dr. M. H. Merriman, Dr. and Mrs. E. N. Carpenter, Dr. and Mrs. Arthur W. Bingham, Dr. J. H. Thompson, and Dr. J. C. Sharp, sailed recently for Europe.——Dr. Reginald H. Sayre has returned from Europe.

NORTH DAKOTA

Personal.—Dr. and Mrs. G. L. Goslie, Fargo, have returned after a year abroad.——Dr. D. L. Dunlap, physical director of the University of North Dakota, Grand Forks, has resigned.——Dr. and Mrs. R. A. Beard, Fargo, have started for Europe.

Hospital Notes.—The commissioners of Ward County have decided to sell the county hospital now known as St. Joseph's Hospital, Minot, and have advertised for bids to be received on or before August 26. The property will be held subject to the lease now held by the Sisters.——Parkview Hospital and Sanitarium has been incorporated at Jamestown by Drs. W. A. Gerrish, P. G. Arzt and M. H. Sides with a capital stock of $40,000. The hospital will be three and one-half stories in height, of brick construction, fireproof throughout, and will have accommodation for fifty patients.

Work of Public Health Laboratory.—During the past year more than 7,000 tests and examinations of various kinds were made at the North Dakota Public Health Laboratory, Grand Forks, and at its two branches in Minot and Bismarck. There were 2,047 tests of water; 1,062 examinations of sputum; 13 individuals suffering or supposed to be suffering from rabies were treated; 706 Widal tests were made; 439 cultures for diphtheria were taken; 767 specimens of milk and cream were analyzed; 522 specimens of pus were examined, and 193 specimens of pathologic tissue were examined.

PENNSYLVANIA

Health Bulletins.—The April issue of *Health Bulletin*, published by the State Department of Health, is devoted to detailed information regarding the organization of baby-saving shows and that for May takes up the question of prevention of drowning, rescue, first-aid treatment, artificial respiration, etc. The method of resuscitation is fully illustrated.

Personal.—Dr. Clyde R. McKinniss has been appointed a member of the staff of the Norristown State Hospital, vice Dr. William W. Richardson, resigned.——Dr. W. E. Lang, Easton, has been appointed assistant physician of the Ritters-

ville State Hospital and placed in charge of the male department.——Dr. Omar H. Mehl, Braddock, had his automobile wrecked, but was only slightly injured himself when the machine was struck by a Pittsburg and Lake Erie train, August 1.——Dr. Howard Wood, McKeesport, has sailed for Europe.——Dr. Alfred Myers, York, is reported to be seriously ill.——Dr. J. Walter Park, Harrisburg, was operated on for appendicitis at the Harrisburg Hospital, July 26.

Hospital Notes.—It is planned to make extensive additions to Packer Hospital, Sayre. The first of these is a children's ward containing eighteen ward beds, six private rooms, etc. This is to be of fireproof construction and is to be fully equipped and furnished at the expense of Mrs. Mary Packer Cummings, Mauch Chunk. A surgical pavilion is also to be erected which will have two operating-rooms, waiting-rooms, locker-rooms, sterilizing-rooms, etc. This addition is being built by the Ladies Auxiliary in memory of the late Dr. Charles H. Ott. The space now occupied by the operating-rooms, dispensary, drug-rooms, etc., will be remodeled and used for a large dispensary, with waiting-rooms and smoking-rooms.——The new State Hospital for the Criminal Insane, Fairview, is almost completed and will be ready for occupancy, October 15. Dr. T. C. Fitzsimmons, Waymart, has been appointed superintendent.——Mid-Valley Hospital was opened for the reception of patients, August 1. This institution is chiefly the development of private charity that recognized the necessity of such an institution between Scranton and Carbondale.——The State Insane Hospital, Rittersville, was formally opened July 25, but the institution will not be ready to receive patients for several weeks.

Philadelphia

Physicians' Building.—Several physicians have organized the Clinical Society of Philadelphia. One of the objects of the society is to erect a building in the central part of the city to cost about one million dollars which will be used entirely for offices for physicians.

Hospital News.—The University Hospital is enlarging its nurses' home and building additions at Thirty-fourth and Spruce Streets. Plans for the nurses' home of the St. Luke's Hospital are now being estimated on by Henry P. Schneider, the builder. The structure will be 33x73 feet with a wing 33x47 ft., two stories in height, of brick construction.

Personal.—Drs. C. B. Penrose and Ross H. Skillern have sailed for Europe.——Dr. John G. Clark has returned from Europe.——Dr. Lewis W. Steinbach has returned after a visit to the Holy Land.——Dr. A. H. Stewart, first assistant bacteriologist of the Board of Health, has resigned to engage in private practice.——Dr. Benjamin L. Gordon, police surgeon and member of the staff of Mount Sinai Hospital, was brutally assaulted and robbed August 1.——Dr. Lewis Brinton was struck by a motorcycle at Atlantic City, July 30, and sustained a concussion of the brain and serious internal injuries.

Health Bureau Warnings.—Because many cases of typhoid fever in the southern section of the city have been traced to either the indiscriminate drinking of raw water or to swimming in either the Delaware or Schuylkill rivers, Director Neff, in a public health bulletin issued August 7, warns the public against swimming in the Delaware, the Schuylkill or any river polluted with sewage. The Department of Health has issued during the week a bulletin on hydrophobia. There were two deaths of persons in this city caused by rabies last year and ten in the entire state. The department advises prompt treatment in a hospital or by a physician of all persons bitten by dogs or other animals, no matter how slight the wound.

WISCONSIN

New Officers.—Waupaca County Medical Society at Waupaca, July 25: president, Dr. P. J. Christofferson, Waupaca; secretary, Dr. George T. Dawley, New London.

Sanatorium Notes.—The Sheboygan County Antituberculosis Association has decided to ask cooperation of the County Board for the use of the brick residence on the Taylor Farm as a county sanatorium for tuberculosis.——Eau Claire County has decided to accept the site offered in the neighborhood of Mount Washington as the location for the county tuberculosis sanatorium.——Bids have been accepted for the Manitowoc County Tuberculosis Sanatorium, Whitelaw, which will accommodate 25 patients and is expected to cost a little more than $12,000.

Personal.—Dr. Louis Shapiro, Milwaukee, medical inspector of the Bureau of Health of Manila, district health officer for the Mountain Province and chief of the Bontoc Hospital Division, has returned to the United States on leave of absence after four years in the Philippine Islands.——Drs. G. A. Hipke and A. R. F. Grob have resigned as trustees of the Emergency Hospital, Milwaukee, and have been succeeded by Drs. Curtis A. Evans and Ralph Elmergreen.——Dr. H. R. Adams, Marinette, is reported to be critically ill.——Dr. Frank Scheele, Wauwatosa, has been appointed a member of the staff of the Emergency Hospital, Milwaukee, vice Dr. L. Baum, resigned to accept a position as surgeon to the International Harvester Company, Chicago.——Dr. John W. Jones, Clinton, is reported to be critically ill.——Dr. P. H. Hansberry, Hillsboro, who was seriously injured recently, is still under treatment at St. Joseph's Hospital, Milwaukee.——Frank W. McKee, Richland Center, is recovering slowly from an operation on the throat.

GENERAL

Missouri Valley Meeting.—The Medical Society of the Missouri Valley will hold its silver jubilee at Council Bluffs, Ia., Sept. 5-6, under the presidency of Dr. J. M. Bell, St. Joseph, Mo. The medical and surgical orations will be given by Drs. W. O. Bridges, Omaha, and Henry T. Byford, Chicago, respectively. A feature of the first afternoon will be the symposium on anesthesia, and on the day following the meeting a series of clinics will be given in Omaha.

Pellagra Conference.—The second triennial meeting of the National Association for the Study of Pellagra will be held in Columbia, S. C., October 3-4. The sessions of the association will be held in the Assembly Hall at the State Hospital for the Insane. At the first afternoon session, etiology, epidemiology and statistics will be considered and in the evening an address will be delivered by Surgeon-General Rupert Blue, U. S. P. H. & M.-H. Service. On the second morning the subject for discussion will be the laboratory investigation for pellagra and the clinical features of the disease. In the afternoon the sociologic study and treatment of the disease will be taken up. On the second evening there will be an exhibition of lantern slides illustrating pellagra.

Public Health Service Bill Passed.—The House of Representatives on August 10, and the Senate on August 13, passed the Public Health Service Bill, which, in one form or another, has been before Congress for several years. The bill as passed is as follows:

"An act to change the name of the Public Health and Marine-Hospital Service to the Public Health Service, to increase the pay of officers of said service, and for other purposes."

"That the Public Health and Marine-Hospital Service of the United States shall hereafter be known and designated as the Public Health Service, and all laws pertaining to the Public Health and Marine-Hospital Service of the United States shall hereafter apply to the Public Health Service, and all regulations now in force, made in accordance with law for the Public Health and Marine-Hospital Service of the United States, shall apply to and remain in force as regulations of and for the Public Health Service until changed or rescinded. The Public Health Service may study and investigate the diseases of man and conditions influencing the propagation and spread thereof, including sanitation and sewage and the pollution either directly or indirectly of the navigable streams and lakes of the United States, and it may from time to time issue information in the form of publications for the use of the public.

"Sec. 2. That beginning with the 1st day of October next after the passage of this act the salaries of the commissioned medical officers of the Public Health Service shall be at the following rates per annum: surgeon-general, $6,000; assistant surgeon-general, $4,000; senior surgeon, of which there shall be 10 in number, on active duty, $3,500; surgeon, $3,000; passed assistant surgeon, $2,400; assistant surgeon, $2,000; and the said officers, excepting the surgeon-general, shall receive an additional compensation of 10 per cent. of the annual salary as above set forth for each five years' service, but not to exceed in all 40 per cent.; provided, that the total salary, including the longevity increase, shall not exceed the following rates: assistant surgeon-general, $5,000; senior surgeon, $4,500; surgeon, $4,000; provided further, that there may be employed in the Public Health Service such help as may be provided for from time to time by Congress."

As will be noticed, the bill provides for the simplification of the name, the broadening of the functions of the service, and an increase in pay for its officers.

The Plague.—August 3 a mass meeting was held in the Crescent Theater, New Orleans, to discuss the plague situation. The meeting was addressed by Dr. J. H. White of the Marine-Hospital Service, Dr. Oscar Dowling, Secretary State Board of Health, Dr. W. T. O'Reilly, City Health Officer, Dr. C. W. Duval and others. The situation was gone over thoroughly and the objects and methods of the campaign against rats explained to a large audience. It was proposed by one speaker to ask the state legislature for an appropriation of one million dollars to aid in the extermination of rats.——A brown wood rat was discovered on the water front, which was a very unusual location in which to find this species of rat, but it gives a hint as to how the plague may be spread among small rodents throughout the country districts as has been the case in California.——The forty-seventh case of bubonic

plague in Porto Rico was reported August 6 by Surgeon Creel of the Marine-Hospital Service. The case occurred in San Juan and had been under observation for some time.——The American Embassy at Trieste reports that on July 7 dead rats were discovered in the hold of the steamship *Africana* which had recently arrived from Buenos Ayres. Bacteriologic examination showed that the rats had died from bubonic plague. By order of the sanitary commission, work on the boat was stopped and it was towed out into the harbor and placed under quarantine. No member of the crew had developed the disease. ——On June 18 the death occurred of a Filipino watchman in the Chinese district of Manila, which was the first death in Manila from plague in more than seven years. Necropsy showed typical lesions of bubonic plague, which was confirmed by microscopic examination and by inoculations in guinea-pigs. No plague has been found in rats in Manila since June, 1906. All precautions were taken. The origin of the case could not be determined. The interesting fact was noted, however, that the man had sloughing tonsils.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Aug. 3, 1912.

Injury Confounded with Intoxication

There was a curious conflict of evidence in the case of a taxicab driver who was charged with being drunk while in charge of his cab. A policeman said that the driver's cab had been in collision with a motor bus and that he appeared to be drunk. The police surgeon who examined him said he was unquestionably drunk; he smelt of drink, his statements were incoherent and he could not stand properly. A police inspector stated that he was drunk and that he smelt of drink and staggered. The driver swore that his cab was run into by the bus and that he received a blow, as the result of which he lost his senses for nearly an hour. He had had nothing to drink and had been a teetotaler for years. Evidence was then given by the matron of a maternity and nursing home who saw the accident and was about to give the man brandy when she was stopped by the policeman who said, "The man is drunk." She answered, "He is not, but is suffering from shock." There was not the slightest suspicion of drink. He smelt of smoke, not of drink. A cyclist also gave evidence in the driver's favor. In answer to the magistrate the physician said that a mark on the driver's cheek did not indicate a blow sufficiently severe to account for his condition. The magistrate in summing up said he was impressed by the evidence of the nurse, who was a woman of strong common sense. The physician was of opinion that the driver was drunk because his conduct was that of a drunken man, but having examined his face, he (the magistrate) believed that the mark indicated a blow severe enough to account for his dazed condition. He had no hesitation in dismissing the charge. From time to time cases of head injury occur in which the subjects are arrested for drunkenness and perhaps die in the police cell, as a consequence of fracture of the skull, which is discovered at the necropsy. It is noteworthy that in this case the injury was not to the skull but to the face.

The International Eugenics Congress, An Event of Great Importance in the History of Evolution, Has Taken Place

The first International Eugenics Congress has been held, at the University of London, under the presidency of Major Leonard Darwin, son of the great evolutionist. It was organized by the Eugenics Education Society, whose aim is to spread a knowledge of the laws of heredity so far as they may improve the race. Invitations to the congress were widely circulated to all eugenics and heredity societies throughout the world and to persons likely to be interested in its objects. Almost every nationality was represented and the number of members numbered about 400. The sittings occupied five days, and papers on almost every aspect of eugenics were read and discussed.

In his opening address, the president said that two great factors influenced them all through their lives—heredity and environment; and if at this congress they were chiefly concerned with the former—with nature rather than with nurture —it must not be assumed that little importance was attached by them to the many endeavors which were being made to improve the environment of the people, his ancestors and predecessors. The history of the world was not a tale of continuous and uninterrupted advance. Nature seemed to be making innumerable experiments, of which many proved failures. It did appear that the world as a whole had always been slowly advancing; but if they looked merely at their own form of civilization history afforded no right to prophesy a continued improvement in the immediate future of the race. Indeed, many circumstances brought to light in recent investigations ought to force them to consider whether the progress of Western civilization was not now at a standstill, and in danger of a retrograde movement. Now by social methods they were doing their best to prevent further progress by this means. The unfit among men were no longer killed by hunger and disease, but were cherished and enabled to reproduce their kind. It was true they could not but glory in this saving of suffering; but they must not blind themselves to the danger of interfering with Nature's ways. Cattle-breeders bred from the best stocks, but the paramount necessity of maintaining a moral code introduced vast difficulties in the case of man. Conscious selection must replace the blind forces of natural selection. Eugenics was but practical application of the doctrine of evolution.

DIFFERENTIATION AMONG PEOPLES

Prof. Enrico Morselli, director of the clinic for mental and nervous diseases, University of Genoa, supplied a paper on "Ethnic Psychology and the Science of Eugenics." He said that all the varieties of the races of mankind differed both physically and mentally. It was necessary that each race, when it knew its contribution to the development of universal civilization, should contemplate the preservation of its own ethnic type. Differentiation among peoples was an indispensable factor in human progress. Eugenics should therefore not look for the realization of a uniform type of man.

LAWS OF INHERITANCE

Prof. V. Guiffrida-Ruggeri, University of Naples, said that the mendelian laws held for man. Every race had a hereditary possession of certain characters, which were transmitted in the germ-plasm.

A MENACE TO BRITISH INSTITUTIONS

Dr. F. L. Hoffman, statistician of the Prudential Insurance Company of America, read a paper on "Maternity Statistics of the State of Rhode Island." The census of 1905, he said, showed that half the population of this typical New England state was of foreign extraction and that native-born women were less fertile than foreign-born. Unless the better classes of America recognized their duty to increase and multiply, there was no chance of the survival of those British ideas and influences which tended to make the world a fit place to live in. In the discussion which followed, it was stated that in the east end of London the story of Rhode Island was repeated. It was also questioned whether the inferior classes were increasing as fast as their birth statistics tended to show. Owing to the wretched conditions of their existence their mortality was high.

THE PROBLEM OF HEREDITY

Mr. Samuel G. Smith, professor of sociology of Minnesota University, read a paper on "Eugenics and the New Social Consciousness." He said that he would prefer for a father a robust burglar to a consumptive bishop, though he would be glad to be adopted in another family soon after birth. Parents of talent were able to give exceptional advantages to their children, who ought to show a greater number of successes, but there was not the slightest evidence that talent of any particular form was ever inherited. Luther, Napoleon and Abraham Lincoln were biologic surprises. In the discussion which followed, it was contended that the statement that "all children were well born" was utterly contradicted by experience. In reply, Professor Smith said that England had set an example to the world in turning criminals to good use. She had sent them to America to become the founders of the first Virginian families and to Australia to produce prime ministers.

EUGENICS AND MILITARISM

Prof. V. Kellog, Stanford University, California, held that militarism acted disastrously on a country through loss of life in war, removing large numbers of young men from the reproducing part of the population, and by the spread through the community of diseases contracted in military service.

THE EFFECT OF ALCOHOL ON THE GERM-PLASM

Dr. A. Mjoen (Norway) said that there had been for four years an agitation by physicians in Norway to compel the classification of liquors in three sections, according to their percentages of alcohol, and that legislation had just been

passed to that effect. He believed that the consequence would be that the consumption of liquors would undergo a gradual change to lighter and harmless drinks.

THE CONGRESS HAS PROVED A GREAT SUCCESS

One of its results is the establishment of a permanent international eugenics committee. Representatives of Great Britain, the United States, France, Germany, Italy, Norway, Denmark, Belgium and Spain are at present included, and there may be added representatives of any other country by request of any important organized group of eugenists. It is proposed to hold an international congress every three years. A meeting of the international committee will be held in Paris next year, when it will be decided where the Congress of 1915 will be held. The choice lies between San Francisco, where there is to be an exhibition in 1915, and Paris. In a farewell address the president said that time alone could tell whether the eugenics movement would progress rapidly or slowly, but succeed it would. One immediate effect which he anticipated was the hastening of the legislation now under discussion in Parliament with regard to the feeble-minded. To stamp out feeble-mindedness from future generations had a leading place in their program. The nation to which they belonged was, as regards its future, largely dependent on the success of their movement. They were the true patriots, because they were toiling without hope of reward. To keep in this narrow path they were bound to separate themselves somewhat from those who were seeking for more immediate objects, however laudable these might be.

Vaccine Therapy: Sir Almroth Wright's Work

The Inoculation Department of St. Mary's Hospital, of which Sir Almroth Wright is director and at which he has done his epoch-marking work on vaccine therapy, has grown considerably. In 1903 the work was commenced in one small room; in 1905 it expanded into two rooms; in 1907 fresh and larger quarters were necessary; and in 1909 it was completely reorganized as the Department of Therapeutic Immunization under a committee of which the ex-premier, Mr. Balfour, became chairman. By the generosity of various donors it became possible to enter into an agreement with the hospital for the use of five wards containing thirty-one beds which previously had been unoccupied and were then equipped for the use of the department. Captain Douglas, late of the Indian Medical Service, whose name has been associated with some of the most important of Wright's work, was appointed assistant director and under him eleven highly qualified assistants. A report has just been issued showing the results obtained by vaccine treatment, particularly of tuberculosis. It is pointed out that the regimen of fresh air, good food, etc., brings about a cure only in cases of slight infection when this is the result of unhygienic conditions. Tuberculosis occurs in another class of persons, who, even when in excellent surroundings, have but a small amount of resistance to the tubercle bacillus, and on coming in contact with it are rapidly infected. In these the ideal treatment is not only to place the patient in the most favorable sanitary conditions but also to stimulate by vaccines the production of antibacterial substances in the blood. A distinction is drawn between "open" cases of tuberculosis in which the bacteria are readily diffused from some central focus into the circulation, and "closed" cases in which they are more or less imprisoned within a barrier of connective tissue thrown around them. In the former the difficulty is to guard against the auto-intoxication liable to be produced even by moderate exertion; in the latter exercise or massage is deliberately employed in order to liberate a sufficient number of bacilli for auto-inoculation.

The Imperial Cancer Research Fund

The annual report of the Imperial Cancer Research Fund by Dr. Bashford, director of the laboratories, contains an important section on the spontaneous recession of transplanted tumors. This was first observed in the mouse and then in the rat. During the past year it has frequently been observed in the case of a tumor of the rabbit which was being propagated in the laboratory. There is therefore no doubt that it is a phenomenon of wide biologic significance. But recession in spontaneous tumors is much rarer; observations during the past eight years show that it occurs in the mouse in tumors proved to be malignant in scarcely 1 per cent. It appears to be due to a disturbance in the relation between epithelium and connective tissue in the course of which the cancer cell loses its aggressive character and is overpowered by the connective tissue. Similar changes occur in the healing of cancer under radium or epinephrin. The continuance of research on these lines is considered most important.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, July 26, 1912.

Parameningococcus Meningitis

On July 23, Prof. F. Widal and M. Weissenbach read a paper before the Académie de médecine on the use of antiparameningococcus serum. In view of the fact that antimeningococcus serum is one of the most effective means of cure in cerebrospinal meningitis caused by the meningococcus of Weichselbaum, which, left to itself, is almost inevitably fatal, Widal and Weissenbach think that when this serum is without effect, the possibility of meningitis caused by a kindred germ, the parameningococcus, should at once be considered. The latter microbe, first discovered by Dopter, is distinguished from the meningococcus by the fact that it does not agglutinate in antimeningococcus serum. The clinical picture of the disease which it causes is in all points similar to that of meningococcus meningitis. Antimeningocóccus serum being ineffective against the parameningococcus, Dopter set about preparing an antiparameningococcus serum. Widal and Weissenbach observed a woman who presented the classical picture of cerebrospinal meningitis and in whom three injections of 40 c.c. of antimeningococcus serum made at two-day intervals were without result. The antiparameningococcus serum of Dopter was then used; after three injections the cure was complete. Only a few cases of parameningococcus meningitis are reported, but as knowledge of the disease becomes more general, no doubt it will be more frequently reported. A diagnosis of cerebrospinal meningitis still indicates the necessity of injecting immediately massive and repeated doses of antimeningococcus serum, for meningococcus meningitis is the form of the disease which is almost always encountered, but if this treatment is without result injection of antiparameningococcus serum should immediately be thought of. Moreover, as an injection of serum into the subarachnoid space demands the previous withdrawal of a certain quantity of cerebrospinal fluid, this fluid should regularly be cultured and the culture tested to see if it is agglutinated by the antimeningococcus serum. Thus if the first serotherapy is unsuccessful it will soon be certainly known if the parameningococcus is the cause of the disease and Dopter's serum can at once be used.

Confinement to Bed in Mental Diseases

At the same session Dr. Magnan, physician of the Sainte Anne Asylum, read a paper on the effects of "Confinement to Bed in Mental Diseases." According to his personal experience, such treatment in an open ward produces much improvement, especially in acute febrile cases. Magnan is impressed by the superiority of the nursing care given by women, who show much more zeal and devotion. He therefore thinks that it would be wise to substitute women for men in the infirmaries and the wards where patients are kept in bed.

The Municipal Laboratories and Pharmacists

The municipal council of Amiens decided to create a municipal laboratory to analyze foodstuffs and make bacteriologic examinations; the Syndicat des pharmaciens du département de la Somme protested, declaring it would be subjected to unfair competition and that there were enough private laboratories so that a municipal laboratory was not necessary. The central government has rejected the demands of the pharmacists on the grounds that as regards foodstuffs the laboratory supplies the means for complying with the law against frauds, and that the bacteriologic analyses which the laboratory is to undertake could not be carried out with equipment found in the ordinary pharmacies. On the same grounds the government has refused to annul, at the request of the Syndicat central des chemists and essayeurs de France an order by the prefect of police allowing the public to make use, on payment, of the service of analysis of the municipal laboratory.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, July 26, 1912.

Personal

Professor von Romberg of Tübingen has been called as a successor of Professor von Baur. I believe I am not mistaken in thinking that Romberg will accept the appointment. If he does, the Munich faculty may congratulate itself, as Romberg is considered to be one of the best of the younger clinicians of Germany.

Professor Matthes of Marburg has received a call to Königsberg as a successor of Lichtheim.

Professor Lubosch of Jena has been appointed a prosector of the Anatomic Institute at Würzburg.

Professor Disse, a prosector of the Anatomic Institute of Marburg, died at the age of 60.

Leyden Lecture

The Leyden lecture, an annual lecture established by the Berlin Society of Internal Medicine as a memorial to its rounder, will be delivered this year in October, by Bashford, the London investigator of cancer. Probably this distinction will be a salve for the wounded pride of Bashford, on whom a fine of £20 was imposed for his attacks on a London quack.

A University at Dresden

The lively public discussion which took place regarding the erection of a university at Frankfort on the Main, and still more the favorable prospects for the accomplishment of this project, have stimulated the ambition of other large cities in Germany—Hamburg, Posen, Dantzic and Dresden—to secure the establishment of universities within their walls. The Saxon government has decided against the project for a university at Dresden on the ground that the learned professions are already overcrowded and that the government does not regard the maintenance of two universities of the first grade as practicable. The same reasons which are here brought up in opposition to a Dresden university may well be urged against all similar projects. The proletariat of scientists in Germany is already sufficiently numerous.

Carcinoma

Professor Poll of the Berlin Anatomo-Biologic Institute has collected genealogic material for the study of hereditary carcinoma. By tracing the ancestral trees of various cancer families it is shown that cases develop with a certain regularity at an early age and with special frequency if both parents are from families affected with cancer, whether they belong to the same line or are not related. The immediate ancestors need not be affected with the disease. In the opinion of Professor Poll, the explanation of such observations, if a large numerical law of the occurrences can be established, must be sought in the direction of the principle of multiple units of heredity. In order to investigate these phenomena more thoroughly, ample material is necessary and, further, exact tables of ancestry, records of the age and the place of the local lesions, with special consideration of the healthy members of the family.

Antivaccinationist Self-Punished

One of the most active opponents of vaccination among German medical men has now experienced in his own body that it is not possible by hygiene alone, as the antivaccinationists claim, to protect one's self against small-pox. Dr. Spohr, of Frankfort on the Main, who is a notorious apostle of the nature cure (Naturheilkunde), was infected with small-pox by a woman patient who had recently come from Russia. Instead of going to a hospital and permitting the prescribed notice of the sickness to be given, he allowed himself to be cared for at home by his wife. The result was that his child and two women living in the neighborhood, together with their physician (homeopath), were attacked by the disease. Spohr went away after his recovery and the authorities learned of the sickness of the child first by an anonymous notice. Now the fanatic will be punished for breaking the contagious disease law.

Relief from Professional Duties on Sunday

In some of the cities of Germany the physicians are organizing to enable them to have Sunday free for leisure. In Berlin it is proposed to divide the city into districts. In each district one physician will have charge of the substitute service and send out quarterly to physicians, pharmacists, newspaper offices and to the central police station, the schedule of service as arranged. The individual physician will thus be on duty according to the number of physicians belonging to his district, at the most once a quarter, while the others may leave their practice unconcerned on Sunday in order to get recreation. The physician who is on duty must be paid immediately for his visit and must report at once to the family physician and to the physician previously called, as well as to the superintendent and must not on any account continue the treatment of the case. The plan proposed seems to answer the purpose, namely, to enable the physician wishing recreation to secure it without detriment. Some difficulties are likely to be experienced in arranging for substituting in the Krankenkassen practice. Also many hindrances may be expected in connection with the practice of specialists.

Annual Meeting of the German Central Committee for the Tuberculosis Campaign

According to the business report of the meeting held in the middle of June, there are in Germany at present 180 sanatoriums for adult consumptives, with about 140,000 beds. For patients in the advanced stage there are 128 hospitals or wards in hospitals. There are twenty-one hospitals for tuberculous children, with 1,351 beds. The number of forest convalescent stations is ninety-nine; the number of open-air schools, sixteen. Bureaus for information and care of tuberculous patients have increased to 720, and are established particularly in the country. Similar organizations are represented by the 537 Baden and 141 Thüringen local committees (*Ortsausschüsse*). Among the subjects discussed in the scientific sessions of the central committee, two were of special importance. The first was the question of the isolation of tuberculous patients in the advanced stages. It was emphasized that the chief source of infection is the tuberculous patient himself, and that therefore the spread of the disease by him to those with whom he comes in contact must be prevented. In the poor classes, among whom tuberculosis has the widest prevalence, isolation of patients in the home is almost impossible. In these cases nothing will help but the removal of patients from the dwelling, a measure practically very difficult. To overcome the objection of patients and their families, the family must be indemnified for the loss of income which is assured to a consumptive individual by the insurance law, so that the family, deprived of the income of the patient, may not become a subject of charity. The idea of isolation should not be made prominent, for the first consideration is assistance to the patient. Patients, as a rule, remain in institutions only so long as their hope of recovery is sustained. Even in advanced cases, therefore, medical treatment and sympathetic personal care must be provided for. The patients should first be treated, as far as possible, in the near neighborhood of their homes, in order that their families may see them. They must be kept healthfully busy, as in light garden work.

Three kinds of isolation may be considered: (1) homes exclusively for advanced pulmonary tuberculosis, (2) special tuberculosis wards in general hospitals, (3) special hospitals for patients afflicted with pulmonary tuberculosis in all stages. According to the experience of the insurance company of the Rhine province, the second and third kind of isolation serve the best purpose. In about thirty of the smaller country hospitals, the company has secured the establishment of tuberculosis wards to which they send patients. The tuberculosis hospital for all stages, in Gladbach-Windberg, has likewise shown good results. Berlin, Charlottenburg, Schöneberg and Cologne have established similar institutions. The number of tuberculous patients under care, the length of time of care and the amount of money expended have been quadrupled in the last five years. The expense for care amounts to an average of 45 per cent. per day for a person, including all subsidiary cost for clothing, medical care and drugs.

According to a review of the sanatorium statistics of the German empire, there were received in 1895 in the German hospitals altogether only 26,107 consumptives; in 1900 the number amounted to 42,530; in 1905, 83,805, and in 1910 it was not less than 123,336. To be sure, in these figures the number of patients received into the sanatoriums is included, but after subtracting the number of such patients, there is evident a marked increase in the admission of consumptives into the general hospitals. The number of patients who have died from pulmonary tuberculosis in the German hospitals has not increased to so great a degree, as it has risen from 10,347 in 1895 to 16,704 in 1910. Judging from the experience of a few large cities, and also from the statements made by the national insurance societies for the Rhine province, it may be expected that in this respect in the future more favorable figures will be presented, and that it will continually be more feasible to induce the seriously ill tuberculous patients of the poorer classes to seek hospital care for the rest of their lives.

Regarding the etiology of tuberculosis, which subject formed an important theme at the international tuberculosis meeting at Rome, Drs. Bruck and Steinberg of the Breslau station for the care of tuberculous patients made a report. They stated the problem of phthisiogenesis in the following question: Is the cause of a tuberculous infection to be found especially in a new infection, or in a quantitative or qualitative peculiarity of the first infection in childhood, or in the occurrence of a certain etiologic factor which does not act specifically before the appearance of manifest tuberculosis?

Bruck describes the single groups with the introduction of examples and concludes that the present state of the investigation indicates the possibility of both an endogenous and an exogenous origin of tuberculosis. Conclusive analogies in

human pathology are hardly permissible from the results of animal experimentation because nothing is certainly known regarding the quantitative susceptibility of man for natural tuberculous infection; also in regard to immunity, animal experiments have not heretofore been able to furnish sufficiently clear results, because the individual animals behaved very differently with reference to reinfection, and in animal experimentation only weeks or months intervene between the first and second infection while in man years and decades are involved. Further, it is not known how long and what quantity of infectious material will overcome a naturally acquired immunity of man. A one-sided emphasis on the protection of the child, which itself without doubt deserves the most active promotion, might easily be undesirable, as it does not take sufficiently into account the occasional exogenous origin of tuberculosis.

Experimental Modification of Spermatozoa by Physical and Chemical Action

Prof. O. Hertwig made a report at the Royal Prussian Academy of Sciences, June 20, on experimental changes in the composition of the germ-plasm of spermatozoa, induced by physical and chemical means. He has made experiments in the Anatomo-Biologic Institute with radium and mesothorium radiation of the germ-cells of various species of vertebrates, such as the trout, triton, frog and toad. The results of these experiments confirmed the law already established for the frog in regard to the curve obtained by graduated radiation of the spermatozoa employed for the impregnation of eggs. This law explained also the newly discovered and at first somewhat surprising fact that in many hybrid impregnations, as between the frog and the toad, between *Rana fusca* and *Rana viridis*, or between *Salamandra mac.* and *Triton taeniatus*, the eggs which have been impregnated with spermatozoa of a foreign species that have been subjected to strong radiation develop into normal embryos and permit the cultivation of larvæ which will live several weeks, while those which are fertilized with spermatozoa which have not been subjected to radiation regularly die and decompose early in the state of the germinal vesicle. Further, it has been established by experiments which were undertaken on *Rana fusca* and *R. viridis* that similar results as those produced by the radiation of the germ-cells can be obtained by the action of chemicals; as for instance, by the action of a suitable solution of methylene blue.

Reduction of the Birth-Rate

A semi-official article in the *Norddeutsche Allgemeinde Zeitung* which is an organ of the government, deals with the question of the birth-rate and the desirability of increasing it. In the introduction emphasis is laid on the fact that the reduction of births in Prussia constitutes a phenomenon which cannot be too seriously considered. Even for the German empire a gradual decrease of birth-rate has been determined. In 1876 there were 42.6 births, for 1,000 inhabitants; in 1890, 38.3; in 1907, 33.2, and in 1910, 30.7. In 1910, for the first time in thirteen years, there was an absolute reduction in the number of births, which was less than 2,000,000. While the death-rate is constantly falling (in Germany in 1876 it was 29.3, and in 1910, 17.1), and therefore the increase in population has been maintained for some time, even with a reduction in the number of births, still the reduction of the death-rate is less than that of births. With a continuation of the present conditions, a point must be reached in which the reduction of the death-rate can no longer compensate for the lessened number of births, and therefore a standstill or even a reduction of the population will occur.

The anonymous author of the article very justly calls attention to the fact that this is especially a social and not a physiologic problem, and that there is no reason for suggesting an exhaustion of the race. According to a social law formulated from considerations of national economy, increasing prosperity is accompanied by a sinking birth rate. History also indicates that the higher civilization drives the individual to the highest development at the cost of reproduction. The increasing difficulty of making a living together with the increased complexity of modern life cause an increase in a family to be regarded as a burden. Many landlords prefer to rent to families without or with only a few children rather than to those who have many children. Against social limitation of births economic and social remedies, such as instruction and education of the people, are recommended and among them a more strict supervision of the advertisements of secret remedies and a systematic propaganda against the tendencies of neomalthusianism. For large cities in which the reduction of the birth-rate has been especially demonstrated, the favoring of the garden city movement, model tenements and increased transportation facilities is to be recommended.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, July 23, 1912.

The New Rector of the Vienna University

Professor Weichselbaum, the well-known pathologist, has been elected for the year 1912-1913, to hold the honorable post of rector of the university, the highest office that can be obtained by a scientist on the staff of one of our universities, and a signal mark of the esteem of his confrères. The four faculties here (medical, legal, theological and philosophical) have each the right to present a member every four years to this office; therefore it will be another four years before a physician will hold that post. The students, with whom Weichselbaum is a great favorite, have received the news with much satisfaction.

A Campaign Against the House-Fly

In this country, as in others, the public is being aroused to the understanding of the danger involved in the presence of the ubiquitous *Musca domestica*, the common house-fly. Several experimenters have investigated the nature of the infections possibly carried by this insect, and after the transmission of streptococcie and staphylococcie infection was repeatedly demonstrated, the facts were made known to the general public. Through the Urania, an institute devoted to the dissemination of knowledge of all kinds among the people, illustrated lectures on the dangerous habits of the fly have been delivered. It is also urged that the children should be taught in school to beware of the fly, especially during the fruit and harvest seasons. Cooperation between public health officers and the market and trade inspectors has secured some commendable ordinances. Thus all retail venders of fruit are obliged to keep these goods covered by glass or a thin-meshed gauze; proper attention has to be paid to the destruction or capture of flies in shops dealing in food-stuffs. Stabling, manure and accumulations of material liable to attract flies are to be kept at a distance from inhabited houses, at least in towns. For the capture of flies traps are recommended from which the fly cannot escape as it does from fly-paper or dishes filled with formaldehyd solution. Stress is laid on the fact that during the warm season the frequency of gastro-intestinal troubles seems to have a marked correlation with the frequency of flies.

Scholarships for Medical Students Willing to Enter the Army Medical Corps

In order to induce a sufficient number of medical students to stay and serve over their term with the army medical corps, the ministry of war has invited the application of medical students, regardless of creed and nationality, for scholarships worth about $1,200 (8,000 kronen) each. Each student has to bind himself to serve not only his regular twelve months with the army, of which six months must be served as a physician in a military hospital, but to stay with the colors six years longer. After that time he may leave without pension, or serve another three years, when he is entitled to a pension of $250 a year, increasing for each year served over the ten years by varying but fair amounts. Heretofore the army medical corps has been seriously lacking in subaltern officers, chiefly because of better outlook for physicians settling down in our fast-growing small towns and quickly developing rural districts.

Marriages

JOHN H. ROHR, M.D., North Milwaukee, to Miss Marie McLean, of Milwaukee, at Nashotah Mission, Wis., August 3.

ROSCOE DRAKE MCMILLAN, M.D., Red Springs, N. C., to Miss Gertrude Anne Garrison of Burgess Store, Va., June 10.

HARRY AINSWORTH CLARK, M.D., to Miss Grace Elmina Urban, both of Boston, at Cristobal, C. Z., July 10.

WILLIAM O. FRYBERGER, M.D., to Mrs. Mary L. Hughes, both of Minneapolis, at Buffalo, Minn., July 30.

WEBSTER EBER GRAY, M.D., Nashville, Tenn., to MAUDE MAY REED, M.D., of Indianapolis, recently.

LOUIS HARRIMAN DOUGLASS, M.D., Baltimore, to Miss Helen Rowles, at Towson, Md., July 30.

HOLLIS ELMER POTTER, M.D., Chicago, to Miss Blanche Morse, of Dillon, Mont., July 24.

GAIUS WILLIAMS BILLUPS, M.D., to Miss Josephine M. Long, both of Baltimore, July 25.

HENRY OLIVER MARCY, M.D., Boston, to Miss Mary E. Smead, of Toledo, Ohio, recently.

THOMAS DANIEL CASEY, M.D., to Miss Mary Perrong, both of Ashland, Pa., July 25.

BERNARD FRANKEL, M.D., to Miss Ray E. Shaffer, both of New York City, July 26.

Deaths

Samuel Campbell Hotchkiss, M.D. Assistant surgeon U. S. P. H. & M.-H. Service; committed suicide in Washington, D. C., August 6, by taking poison. Dr. Hotchkiss was born in Michigan in 1880. He took his academic degree from Oberlin University and his medical course in Western Reserve University, Cleveland, from which he graduated in 1908. A year later he entered the United States Public Health and Marine-Hospital Service and in 1910 was assigned to duty in the division of pathology and bacteriology. At the request of the National Association for the Study and Prevention of Tuberculosis and of the Secretary of the Interior Dr. Hotchkiss was assigned to duty in May, 1911, in the Bureau of Mines to investigate tuberculosis and other occupational diseases among miners. Close application to this work and worry over the completion of his report is believed to have been the cause of the mental aberration during which he committed suicide. Dr. Hotchkiss had an excellent record in the Public Health Service, and his death, just as he was entering upon a new and important field of activity, is a great loss to public health work.

Edmund Marburg Rininger, M.D. Marion-Sims College of Medicine, St. Louis, 1893; a member of the Washington State Medical Association and American Urological Association; medical director of the Guardian Life Insurance Company and of the Alaska-Yukon-Pacific Exposition; one of the most prominent practitioners of the Pacific Northwest and one of the first physicians to practice in Alaska; who was influential in having the senate pass the bill appropriating $25,000 for the care of the sick of Alaska; founder of Holy Cross Hospital, Nome; at one time president of the Seattle Surgical Club; was instantly killed, July 25, in a collision between his automobile and an interurban train near Riverton, Wash., aged 42.

Jethro A. Hatch, M.D. Rush Medical College, 1860; surgeon of the Thirty-Sixth Illinois Volunteer Infantry during the Civil War; a member of the Indiana legislature in 1872 and congressman from the Tenth Indiana district in 1896; a resident of Victoria, Tex., since 1907; died suddenly, August 3, while making a speech before the Victoria County Republican convention, aged 75.

Van Duyne A. Sutliff, M.D. Medico-Chirurgical College of Philadelphia, 1902; demonstrator of anatomy in his alma mater for five years; a member of the American Medical Association and Philadelphia Society for the Prevention and Study of Social Diseases; died at his home in Philadelphia, July 31, from uremia, two weeks after an operation for appendicitis, aged 30.

Richard M. Norment (license, North Carolina, 1893); a member of the Medical Society of the State of North Carolina; a veteran of the Mexican and Civil wars; for several terms a member of the legislature from Robeson County; postmaster of Lumberton since 1900; died at his home, July 30, from senile debility, aged 84.

John William Harris, M.D. Kentucky School of Medicine, Louisville, 1889; a Confederate veteran; for twenty-six years physician to the Madison County Infirmary, Union City, Ky.; health officer of Madison County, Ky.; jail physician and physician to the P. A. Clay Infirmary; died at his home in Richmond, July 29, aged 66.

John Jay Taylor, M.D. Medico-Chirurgical College of Philadelphia, 1887; a member of the American Medical Association, American Medical Editors' Association and American Academy of Political and Social Science; editor and publisher of the *Medical Council;* died at his summer home in South Ocean City, N. J., August 1, aged 58.

Robert L. Russell, M.D. University of Arkansas, Little Rock, 1898; of Leslie; a member of the Arkansas Medical Society; formerly physician in charge of the state penitentiary and later founder of a private sanitarium in Leslie; died in St. Vincent's Infirmary, Little Rock, July 29, aged 49.

Silas Talbert Yount, M.D. Bellevue Hospital Medical College, 1876; formerly of Lafayette, Ind., but for twenty years a resident of Chicago, a specialist in nervous and mental disease, died in St. Luke's Hospital in that city, August 6, from myocarditis, aged 56.

Joseph S. Troutman, M.D. University of Tennessee, Nashville, 1892; for twenty years a specialist on the diseases of the eye, ear, nose and throat; of Paducah, Ky.; died in the Western State Hospital, Hopkinsville, July 30, from cerebral hemorrhage, aged 48.

Wilbur Fisk Lamont, M.D. Albany (N. Y.) Medical College, 1889; a member of the Medical Society of the State of New York; and a practitioner of Catskill for twenty-three years; died in the Albany Hospital, August 1, from pernicious anemia, aged 49.

Roland S. Devlin, M.D. Queen's University, Kingston, Ont., 1906; of Montreal; was shot by an insane man while going to the aid of another individual shot by the same man, and died in the Royal Victoria Hospital from his wounds, August 1, aged 32.

John Samuel Bassett, M.D. Berkshire Medical College, Pittsfield, Mass., 1850; for more than half a century a practitioner of New York City; died suddenly at the Wayside Inn, New Milford, Conn., July 31, from cerebral hemorrhage, aged 84.

George Washington Gray, M.D. University of Nashville, Tenn., 1866; for twenty-five years a resident of Terrell, Tex.; a Confederate veteran; died at the home of his son in Ardmore, Okla., June 12, from senile debility, aged 72.

Andrew Jessup Garrison, M.D. Medical College of Ohio, Cincinnati, 1880; of Indianapolis; a member of the American Medical Association; died in the Cincinnati City Hospital, July 30, from cerebral hemorrhage, aged 59.

Frank M. Conn, M.D. Medical College of Ohio, Cincinnati, 1873; a member of the Washington State Medical Association; died at his home in Seattle, July 24, from the effects of an overdose of chloroform, aged 70.

Ellwood Huggins, M.D. Baltimore University, 1888; for several years a practitioner of Howard and Calvert counties, Md.; died at his home in Baltimore, July 28, from cerebral hemorrhage, aged 64.

William A. Brown (license, Illinois, years of practice, 1878); for several years a practitioner of Danville, Ill.; died at his home in Los Angeles, Cal., July 25, from senile debility, aged 82.

John Barron, M.D. University of Maryland, Baltimore, 1877; for thirty years a practitioner of Govanstown, Md.; died at his home in Baltimore, August 2, from heart disease, aged 70.

Claude Luverne Vaughan, M.D. University of Iowa, Iowa City, 1905; a former member of the American Medical Association; died at his home in Caroline, Wis., July 31, aged 29.

A. S. Campbell, M.D. Medical College of Georgia, Augusta, 1872; a surgeon during the Civil War; died at his home in North Liberty, Ind., July 30, from senile debility, aged 84.

Edwin Sylvester Swisher, M.D. New York University, New York City, 1876; of Socorro, N. M.; formerly of Canton, Ill.; died in Kansas City, August 1, from heart disease.

Elmer Y. Lawrence, M.D. Chicago Medical College, 1867; of York, Neb.; a veteran of the Civil War; died in Boulder, Colo., July 26, from senile debility, aged 82.

Edmund C. Allard, M.D. Hahnemann Medical College, Chicago, 1883; died at his home in Fond du Lac, Wis., August 1, from disease of the kidney, aged 54.

George Anderson Russell, M.D. Central College of Physicians and Surgeons, Indianapolis, 1890; died at his home in Terre Haute, Ind., July 30, aged 50.

David M. Aronsohn, M.D. University of Minnesota, Minneapolis, 1905; of Glasgow, Mont.; died in the St. Paul City Hospital, August 1, aged 35.

George H. Rue (license, Illinois, 1878); of Lexington; died in Bloomington, August 6, from injuries received in a railway wreck near Quincy, Ill.

Harley Hedges Williams, M.D. Ohio Medical University, Columbus, 1902; died at his home in Sydney, Ohio, August 1, aged 33.

Joseph Kingham, M.D. University of Michigan, Ann Arbor, 1866; died at his home in South Branch, Mich., July 16, aged 72.

Ben G. Adamson, M.D. University of the South, Sewanee, Tenn., 1898; died at his home in Jackson, Tenn., July 25, aged 42.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

AN OPPORTUNITY FOR THE PHARMACIST

While the pharmacist can do much toward the advance of medicine and also toward the improvement of the public health, his commercial tendencies have to a large extent made him lose sight of his opportunities. Thus it has been necessary to refer to the close connection of the National Association of Retail Druggists (*N. A. R. D.*), with the patent medicine cooperative organization, the A. D. S., or American Druggists Syndicate (THE JOURNAL, Jan. 8, 1910; Jan. 22, 1910; April 9, 1910). Also the fear has been expressed that the U. S. P. and N. F. Propaganda of the National Association of Retail Druggists, though discouraging the use of secret nostrums, would fall short of our aim toward rational prescribing (THE JOURNAL, March 2, 1912, p. 640). That this propaganda is in fact attempting to perpetuate the use of unscientific "shotgun" mixtures by arguments commonly employed in the exploitation of nostrums was recently pointed out by the *Indiana State Medical Journal* (June 15, 1912, p. 275).

But, while these efforts toward the perpetuation and extension of the patent medicine and the nostrum business are not a credit to pharmacy, *N. A. R. D. Notes*, the official organ of the N. A. R. D., has started a public health propaganda department in which the druggist is urged to protect the public by giving advice as to the seriousness of various diseases and the need of their treatment by trained physicians. When it is considered that a large number of people go to their druggist for advice or treatment for ailments of all kinds, the opportunity which is in the hands of the pharmacist will be appreciated. As the less-educated public still is uninformed of the seriousness of gonorrhea and syphilis and of the need of immediate and efficient treatment of these diseases, and as many druggists still take these afflictions lightly and attempt to prescribe for them, the good effect of the following (*N. A. R. D. Notes*, July 4, 1912, p. 813) will be appreciated:

"Running tuberculosis a close second, we have that other dreaded disease in the domain of society, the gonococcus contagion, or, as it is more commonly called, gonorrhea. This is a filth disease. It is a fruitful cause of blindness. It is highly contagious. Cases apparently cured linger for years and are always contagious, even after a lapse of seven or more years.

THE VULTURES!

"This disease is difficult to eradicate from the system; it is very apt to become chronic, giving rise to very serious after effects. Pharmacists should inform themselves of the cause of this disease and its prevention, and then tell the truth about it. No pharmacist has ever cured a case of it yet, and it is high time that the fake methods of cure (?) were supplanted by common-sense methods.

"Mr. Pharmacist, when a young man comes to you to be cured of this disease, tell him the truth and give him advice, not medicine; send him to the best physician. Tell him that a large proportion of the serious surgical operations endured by women are direct results of neglected cases of gonorrhea, cases that apparently were 'cured;' tell him that half of the blind children in the world are made blind by this disease; tell him that his wife, present or future, and his children, may become affected, through his neglect and his (or your) attempt at a cure; tell him that there are many things about this disease that he should know but which only a skilful physician can tell.

"If you do not do this, Mr. Pharmacist, you are criminally guilty in a greater degree than he is, for he does not know, and you do. But it takes a man to tell such things to our friends and customers, and it is sincerely to be hoped that every pharmacist is a man. Send such patients to a good doctor, not to a quack specialist. Quack specialists are no better than the fake cures advertised in newspapers and magazine.

"Let this one fact stand out plainly and be a warning to every pharmacist: In view of the prevalence of the disease, in view of the hundreds of ways in which it manifests its chronic nature, in view of the increase of cases and the consequent increase in its ravages (cancer, operations, blindness, syphilis, etc.), it is very plain that pharmacists cannot cure it, that fake medicines advertised to cure do not cure it, and that quack specialists have not cured it.

"It is of course a pity that where possibly one case is referred to a good physician or the patient himself goes to such at once, one hundred go to some quack advertiser, or use some of the many advertised fake cures, as lost manhood cures, blood-poison cures, etc. But this is all owing to a want of knowledge on the part of the public, and which can only be changed by educating this same public.

"The first ray of hope looking toward a real cure of this dreaded disease is the discovery, by Ehrlich and Hata, of salvarsan, or 'No. 606.' The tests thus far made with this agent have yielded astonishing results, but only the future can tell whether it is the true remedy or only another 'will-o'-the wisp.'

"What the pharmacist should do in these instances is to send all patients to a reliable physician. It is criminal to do otherwise. Besides, as far as revenue is concerned there can be no loss, for the physician will prescribe and he can prescribe more intelligently than a pharmacist can counterprescribe. However, this is no matter for financial consideration, but one of honor, justice and a conservation of the health

of the human race, and every honorable pharmacist should look at it in that light."

While the author of this lecture apparently has confused the two sexual diseases, the advice given, if followed by the pharmacist, is bound to bring added protection to the public and credit to pharmacy.

MARJORIE HAMILTON OBESITY CURE

Aftermath

Our readers will recall the exposé[1] in this department of THE JOURNAL, March 16, 1912, dealing with the Marjorie Hamilton Obesity Cure. To refresh the memory, we cannot do better than reprint the summary that appeared at the end of the original article:

Here we have a concern advertising, as something new to the United States, a "system" of flesh reduction that is older than the oldest inhabitant. On the specious plea that every part of the treatment is pleasant, the victim is persuaded to part with her money only to find that she must purge, diet, and carry out a system of exercises. This, too, in spite of the fact that, either inferentially or directly, she has been led to believe that none of these methods forms part of the "treatment." She is told—before she sends her money—that neither the internal nor external use of drugs is part of the "treatment;" she finds—after she has sent her money—that the use of saline purgatives internally and of a strongly alkaline powder externally, are part of the "system." She is told—also before she sends her money—that she may eat all she desires; she finds—after she sends her money—that she must give up, among other things, "white bread, potatoes and pastries." She is told—once more, before sending her money—that it is unnecessary to take up "terrible gymnasium work;" she finds—of course, after sending her money—that exercises with and without dumb-bells and Indian clubs are part of the "system."

After THE JOURNAL article appeared, the United States postal authorities took a hand and on June 7, 1912, W. C. Cunningham and his wife, Marjorie Hamilton Cunningham, were indicted by the federal grand jury and placed under arrest. The indictment charged them, first, with devising a scheme to defraud and, second, with the fraudulent use of the mails to further that scheme. The Denver papers at the time of the arrest stated that the court records and papers in the hands of the federal authorities showed that Cunningham had, in 1906, served a term of eight months in jail in Minneapolis for fraudulently listing fees when he was the "president and manager" of a real estate business in that city conducted under the names, North American Land Co., the Security Land Co., the Cooperative Land Co. and the Commercial Land Co. In addition to his "listing fee" scheme he also is reported to have advertised and sold a book on "Real Estate Instructions and Scientific Salesmanship."

Further, the records are said to show that after completing his jail sentence, Cunningham went to Rochester, N. Y., where he became associated with C. F. Clark and T. F. Adkin, who, with E. Virgil Neal (X. LaMotte Sage), have been engaged in exploiting various mail-order medical fakes. Our readers will remember references to this trio in connection with the Turner Obesity Cure and the thought arises that Cunningham probably got his idea for the Marjorie Hamilton Obesity Cure from the Turner concern, operated by Adkin and Clark. The family resemblance between these fakes is a strong one. From Rochester, Cunningham went to Buffalo, N. Y., where he started a mail-order business of his own, selling "beauty treatments." From Buffalo, he came to Chicago where he conducted the various enterprises that were described in the article on the Marjorie Hamilton Obesity Cure.

PRINCESS TOKIO

Since our previous article appeared, Cunningham has branched out in the mail-order fake line. The "Princess Tokio Beauty Company" is the name of his new venture. "Princess Tokio" is said to be "introducing to America for the first time, the new quick wrinkle remover." The methods are what would be expected of Cunningham: Follow-up letters of the same picturesque class as those sent out by his obesity cure concern; a sliding scale of prices starting with $5 in the April letter, dropping to $3 in May, offering it for $2 in June and finally reaching $1 in July. Some of the Princess Tokio letters are perfect gems of advertising. For instance:

"We wish to warn our customers not to use the treatment more than once daily, so that we remove their wrinkles gradually INSTEAD OF INSTANTLY. We warn you of this, not because it is in any way injurious to the skin, but because it achieves such surprising results in so short a time that it often causes embarrassment if you remove all your wrinkles in one day."

But Princess Tokio and Marjorie Hamilton will soon be no more known—to their native land at least. The Denver papers for July 24 state that Cunningham will retire from business in the United States and will confine his activities entirely to the European field. Willard B. Cook, formerly connected with the Van Camp Packing Company, and Charles E. Hayes, an advertising man, are said to have purchased an interest in Cunningham's foreign rights and to have sailed for London to take preliminary steps for the opening up of the European fields. Their previous experience in the bean canning and advertising industries naturally qualifies them to act as experts in the cure of obesity!

With the ruling passion for the almighty dollar strong, even on the eve of dissolution, the concern makes a final attempt to separate the credulous from their cash. Those unfortunates who are on Marjorie Hamilton's mailing list have received, within the past few days, another heart-to-heart circular letter which commences:

"I have decided to retire from business. The clamor, strain, worry and work to which I have been subjected in the transaction of my enormous business have been more than I have bargained for when I first undertook to give the fat people of the world the benefit of my great treatment for fat reduction."

Then she continues pathetically:

"But the strain has been too great and I must reluctantly admit that I must hereafter forego the good work and retire to rest and recuperate. That I have had a success beyond my fondest expectations has been the encouraging and hopeful reward of my efforts to benefit suffering humanity and I shall go back to the obscurity of private life with the consciousness of having done a great good to a veritable army of people who needed my aid and whose letters of gratitude are my most precious belonging. I feel there are other avenues where I can devote my life to relieving the sufferings of the poor, the helpless and hopeless where my love for humanity will have a more limited but a more tranquil and less strenuous opportunity, so I am writing to thank you for your interest in me and my treatment and to bid you goodbye."

All of which leads up to the marvelous reduction to "$1 only" for her Great Quadruple Combination Treatment for Fat Reduction. As a parting shot, she says:

"Whether you buy my treatment or not, let me urge on you not to let so-called doctors induce you to poison your system with drugs."

Thanks to the publicity first given this fraud by THE JOURNAL and copied largely by the more independent newspapers, then admirably followed up with an investigation by the post-office authorities, the American public has received protection from at least one fraud. Great Britain has no fraud order system connected with its postoffice department and the British Isles are becoming the dumping grounds for the faker whose native land has grown too hot for him. With the closing of the Marjorie Hamilton fakery there passes into the limbo of forgotten frauds one of the most picturesque and impudent humbugs of the pseudo-medical type.

1. This article has been reprinted in pamphlet form; illustrated; price, 4 cents.

Confidence as an Element in Psychotherapeutics.—Better than any "system" is that valuable psychotherapeutic influence which takes the form of confidence in the doctor—confidence on the part of the patient, based on the belief that the doctor knows, and is doing what is best, confidence in himself on the part of the doctor, based on the fact that he knows what is best, and is doing it.—Bondurant in *Medical Record*.

Correspondence

A Plan for the Adoption of the Metric System

To the Editor:—The advantages of the metric system of weights and measures are so numerous and apparent that it may be considered almost an insult to a reader's intelligence to enumerate them, yet we are little nearer the realization of these benefits than we were when the system originated in the brain of the great prime minister of the First Empire.

The system was made legal in France in 1801 and was made compulsory in 1840. It was made legal in England in 1864 and in the United States in 1866, yet it is not compulsory in either, and really amounts to little more than a hardship, an additional tax on the mentality of an already severely taxed professional and scientific world.

The pharmacist with two systems, the avoirdupois and apothecaries', already contributing a full share to his confusion, finds himself burdened with a third. The medical student, often driven to the verge of despair by his hundreds of hours allotted to the intricacies of such exhaustless and often exhausting studies as anatomy, chemistry and physiology, finds himself robbed of some of his few hours for practical materia medica in order that he may be drilled in a system of weights and measures against the use of which he is privately cautioned for reasons that unfortunately are only too potent.

As the metric system of weights and measures possesses all the superiority over others that our decimal money system does over one like the English, and the use of several systems at one time is almost intolerable, the natural end to be desired is its universal adoption. Yet definite government action looking toward the attainment of that object seems as far distant as it was many decades ago.

I believe that the professions particularly interested in medicine have reached that stage of organized effort that would now render comparatively easy the accomplishment of a task that a few years ago might have been impossible. I believe also that the necessity of the single set of standards is widely acknowledged and that energetic, well-directed action on the part of the medical profession, as represented by the American Medical Association, will secure the cooperation of others to be benefited and will result in the much needed reforms.

The present status of the prescribers and compounders may be summed up in part as follows:

Dosage to be of ready value to the physician in correctly prescribing, or to the pharmacist in rechecking the prescription, must be impressed on the memory to the point that its use is almost automatic—a linguist to speak any language fluently must speak one automatically.

It is confusing in the extreme to try to remember arbitrarily dosage in two systems.

The older prescribers, with but few exceptions, learned the apothecaries' system for all uses. They see no reason for changing and, as matters now stand, there is none.

The prescribers recently graduated, in the majority of instances, were taught the apothecaries' system primarily, and are not fundamentally grounded in a thorough familiarity with the metric system, for under the existing conditions the teacher can plead no legitimate excuse for teaching the latter thoroughly.

The pharmacist, old or recent, was and at present should be taught the apothecaries' and avoirdupois systems primarily, as they are the ones representing the vast majority of his daily uses.

At present the practice of prescribing by the metric system is questionable as many pharmacists are not even equipped with these weights and measures and being forced to transpose to the apothecaries' system, liability to error results.

The bottles in common use are made for apothecaries' measures.

Even if the pharmacist has the requisite weights and measures, he usually knows his dosage in the old system, and in rechecking must make a mental transposition and so does not constitute to the same extent the toxicologic safeguard between prescriber and patient.

If the prescriber has had the same equipment and has to resort to the same mental processes, he is more liable to need this usually efficient safeguard.

The pharmacist at present buys solids by avoirdupois weights, sometimes by metric; he buys liquids by apothecaries' measure, avoirdupois weight and sometimes by metric weight or measure. His lay sales are usually by avoirdupois weight or apothecaries' measure. He dispenses by apothecaries' weight and measure, sometimes by metric. Many of his formulas, as percentage solutions, must take into account the difference between a fluidounce by measure and weight. Yet we condemn him for mistakes and wonder whether he or his fathers sinned when he finds an early grave.

To those not familiar with the metric system its intricacies are largely exaggerated. Unfortunately the text-books treating it usually give lengthy tables, confusing even to look on, and do not lay emphasis on the fact that only a part—a very small part—is ever used in prescribing.

Looking to the immediate needs of the related professions, should I meet with sufficient encouragement, I hope to present or see presented at the next meeting of the American Medical Association a paper suggesting energetic effort directed toward securing the adoption of the metric system exclusively in prescribing and compounding medicine.

There can be but little doubt that a delegation selected by the American Medical Association would secure the selection and cooperation of delegations from such organizations as the American Pharmaceutical Association, the National Association of Retail Druggists, the National Wholesale Druggists Association, the American Dental Association, the medical and pharmaceutical college associations, the state board associations and others, these delegates to constitute a body to agree on a plan for the adoption of the metric system in things pertaining to medicine.

As a suggestion of what might be hoped for, the following outline is submitted:

1. For a period of four years, let us say, all medical, dental and pharmaceutic schools should require all dosage in all quizzes, exercises and examinations to be given in both systems, and after that time only in the metric system; and all new editions of text-books should be accepted only when the metric system primarily is employed in stating weights and measures.

2. For four years all state medical, dental and pharmaceutic examining boards in every examination should include a comprehensive set of questions on the metric system the answering of which is compulsory; and for the same time all dosage should be required to be given in the metric system primarily, and after that time in the metric only.

3. For four years and afterward, all papers citing weights and measures read before bodies of these professions should be required to use both systems, or metric only.

4. For four years, all journals of these professions that can be influenced should publish articles that use weights and measures only in the metric system or both systems.

5. A propaganda should be inaugurated that after four years all prescriptions be written in the metric system and that previous to that time, say after two years, the metric system or both be used at the discretion of the prescriber. The pharmacists should further arrange that for two years drugs ordered from jobbers would be accepted either by the metric or other systems, but after that time all drugs would be ordered by the metric system exclusively.

6. After four years containers should be ordered for metric quantities only.

7. All prescription blanks ordered for distribution should have the line near the right-hand margin for the convenience of entering metric quantities. The wholesalers, manufacturers, etc., should further arrange that after two years all catalogues and other quotations be expressed in the metric system or both, and after four years in the metric system only.

It is still remembered how easily the pharmaceutic manufacturers, by concerted action, discontinued the use of the half-gallon bottle.

Further in connection with this could a more opportune time be found for the adoption, by the interested professions, of the centigrade thermometer? Its acceptance could, in point of time, be arranged to go hand in hand with the decimal system of weights and measures.

All of this would not work out without opposition from many sources and much inconvenience being entailed. The success of almost every scheme for the improvement of existing conditions has been purchased with sacrifices.

In this instance is not the desired result worthy of any reasonable expenditure of patience and unremitting effort on the part of those most concerned?

O. W. BETHEA, M.D., PH.G., F.C.S., New Orleans.

"Some Features of Anaphylaxis"—Failure to Credit Dr. Vaughan

To the Editor:—May I call attention to an injustice in the editorial on anaphylaxis in THE JOURNAL (August 3, p. 372)? The ideas there ascribed to German investigators were original with Dr. V. C. Vaughan, of Ann Arbor, having been formulated by him several years ago, and extensively investigated in his laboratory.

H. G. WELLS, Chicago.

To the Editor:—Under this heading an editorial in THE JOURNAL (August 3, p. 372) gives Friedberger the credit of having proposed the theory that in anaphylaxis an enzyme is formed which splits up the protein on its second injection and that the harmful effects are due to the split products resulting from this cleavage. Friedberger has made many valuable contributions to our knowledge of anaphylaxis and some of these strongly support the theory of the formation of ferments, but he was not the first to propose this theory and I do not think that he would make such a claim for himself. The ferment theory was first proposed by Vaughan and Wheeler in the *Journal of Infectious Diseases* (June, 1907). The American investigators are generally given the credit for this theory in Germany, but not in your editorial. This might be shown by many quotations from German scientists, but at present I will copy only one. Biedl and Kraus (Kraus and Levaditi: "Handbuch der Technik und Methodik der Immunitätsforschung," supplementary vol. i, p. 286) say: "Vaughan and Wheeler suggest that after the first injection of the antigen a specific ferment is formed which remains in the organism as a proferment and this is activated on the reinjection of the antigen. This ferment splits up the protein into toxic and non-toxic portions and to this latter the anaphylactic shock is due."

Not only were Vaughan and Wheeler the first to propose this theory, but it was in the laboratory of hygiene of the University of Michigan that the actual existence of such a ferment in the sensitized animal was demonstrated and its cleavage action on the antigen proved. The contribution detailing this work may be found in *Zeitschrift für Immunitätsforschung*, xi, 673.

It is exceedingly distasteful to me to have to call attention to my own work, especially in my own country, but I cannot allow your editorial to pass unnoticed.

V. C. VAUGHAN, Ann Arbor, Mich.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

WHAT IS A NORMAL SOLUTION?

To the Editor:—In order to settle an argument regarding the question of a normal solution, please advise me if the following is correct?

I assert that a normal solution of a substance is the molecular weight of the given substance, expressed in grams, divided by the hydrogen equivalent and added to sufficient amount of water to make a liter.

For example, a normal solution of sulphuric acid would be one made as follows: The molecular weight of H_2SO_4 is 98. As the hydrogen equivalent of H_2SO_4 is 2, I would use one-half the molecular weight, or 98 divided by 2, which is 49, this being expressed in grams and added to sufficient water to make a liter.

A normal solution of sodium chlorid, NaCl, would be determined as follows: Since NaCl is derived from HCl, the hydrogen equivalent of NaCl would be 1, as the acid is 1, hence in this case the entire molecular weight of NaCl, or 58.5 gm., should be added to a sufficient amount of water to make a liter.

Please explain this matter fully, stating the difference between an isotonic normal solution, physiologic normal solution, etc.

O. J. MILLER, M.D., Sanford, Fla.

ANSWER.—The definition given by our correspondent is essentially correct if it be understood that a liter of normal sulphuric acid must contain one-half the molecular weight, expressed in grams, of *absolute hydrogen sulphate*. The following, taken from the United States Pharmacopeia, further explains the strength of normal solutions:

"*Normal volumetric solutions* (N/1) are those which contain in one liter, in any stated reaction, the chemical equivalent of 1 gm. of hydrogen. If the molecule of the reagent is univalent, one liter will contain the weight in grams equal to the molecular weight of the reagent; if bivalent, a weight in grams equal to one-half its molecular weight; if trivalent, a weight in grams equal to one-third its molecular weight.

"Thus, hydrochloric acid, HCl=36.18, having but one H atom replaceable by a basic element, has 36.18 gm. of absolute HCl in 1,000 c.c. of the normal volumetric solution; while sulphuric acid, H_2SO_4=97.35, having two replaceable H atoms, contains only one-half this number, or 48.675 grams of absolute H_2SO_4 in 1,000 c.c of its normal solution. Potassium hydroxid, KOH=55.74, has but one K to replace one H in acids, hence its normal solution contains 55.74 grams of pure KOH in one liter. Again, one molecule of potassium dichromate in oxidation liberates *three* atoms of oxygen, which are capable of oxidizing *six* atoms of ferrous to ferric iron. Therefore, each molecule of the dichromate, yielding *three* atoms of oxygen, is equivalent to *six* atoms of hydrogen. Hence, the normal solution should contain 292.28÷6 or 48.713 gm. in 1,000 c.c. Two molecules of potassium permanganate $2KMnO_4$=313.96, in oxidation, give off five atoms of O, which are equivalent to ten atoms of H; hence its normal solution should contain 313.96÷10 or 31.396 gm. in 1,000 c.c."

While in the present Pharmacopeia the molecular weights are calculated on the basis of hydrogen as a unity it is now more general to base molecular weights on oxygen, which is taken as 16. Thus the molecular weight of sulphuric acid generally rounded off to 98 (2+32+64=98) according to the United States Pharmacopeia is 97.35 (2+31.83+63.52=97.35) while according to the latest revision of atomic weights based on oxygen = 16 the molecular weight for sulphuric acid becomes 98.086 (2.016+32.070+64=98.086).

An isotonic solution is one of such strength that it will have the same osmotic pressure as another solution, with which it is said to be isotonic. A solution isotonic with the blood-plasma is obtained by dissolving sodium chlorid in water to a strength of 0.9 per cent. This solution when mixed with blood causes no hemolysis of the red blood-corpuscles. A solution of 0.7 per cent. of sodium chlorid produces so little change in the osmotic conditions and so little hemolysis of the red blood-cells that it is commonly used as a physiologic normal solution, and has received this designation. Formerly, a solution of 0.56 per cent. of sodium chlorid, which is the strength of the sodium chlorid of the blood, was termed a normal salt solution. This is still frequently used in therapeutics under the name of "normal salt solution," or "physiologic salt solution," although, as will be noted, it is not strictly isotonic with the blood. While a solution of 0.9 per cent. of sodium chlorid is isotonic with the blood-plasma, yet because its content of sodium chlorid is greater than that of the blood, it will cause a certain amount of sodium chlorid to be diffused into the blood and replaced by other salts.

LITERATURE ON DUST

To the Editor:—Please give references to literature on the subject of dust which has appeared within the last two years.

E. A. CRULL, M.D., Fort Wayne, Ind.

ANSWER.—

Prudden: Dust and Its Dangers, G. P. Putnam's Sons, New York, price, 75 cents.

Hessler, Robert, Logansport, Ind.: Dusty Air and Ill Health, price, $1.65.

W. C. Hanson: Protection of Factory Employees Against Dust Arising from Certain Occupations, *Am. Jour. Pub. Hyg.*, June, 1910.

Shingu, S.: Inhalation of Coal Dust by Children, *Virchows Arch. f. path. Anat.*, May, 1910; abstr. in THE JOURNAL, July 9, 1910, p. 177.

Lead and Dust in Pottery Works (London Letter), THE JOURNAL, July 23, 1910, p. 324.
Anders, J. M.: Street Dust as a Factor in Spreading Diseases, *Med. Record*, October, 1910.
Anders, H. S.: The Dust Menace and Municipal Diseases, THE JOURNAL, Nov. 4, 1911, p. 1524.
Street Dust and Food, THE JOURNAL, March 25, 1911.
Gehrmann, A.: Facts as to City Dust, *Monthly Cyclopedia and Med. Bull.*, November, 1911, abstr. in THE JOURNAL, Dec. 30, 1911, p. 2164.
The Pathways of Inhaled Dust, THE JOURNAL, May 11, 1912, p. 1448.

TECHNIC OF WASSERMANN REACTION

To the Editor:—Please refer to literature on the technic of the Wassermann reaction. E. A. WATSON, M.D., Kearney, Neb.

ANSWER.—The technic of the Wassermann reaction is described in recent text-books on clinical diagnosis, and was summarized in this department Aug. 3, 1912, page 386. A list of articles on the subject was published in THE JOURNAL, April 9, 1910, p. 1226. The following more recent articles which deal with the technic may be referred to:

Ferrannini, L.: Simplified Technic for the Wassermann Reaction, *Riforma med.*, Feb. 6, 1911; abstr. in THE JOURNAL, March 18, 1911, p. 860.
Thomsen, O., and Boas, H.: The Wassermann Reaction and Resistance to Heat of Antibodies Involved, *Hospitalstid.*, Aug. 2, 1911; abstr. in THE JOURNAL, Oct. 14, 1911, p. 1333.
Peters, H. L. B.: Relation of Natural Antisheep Amboceptor to Wassermann Reaction, *New York Med. Jour.*, Nov. 18, 1911; abstr. in THE JOURNAL, Dec. 2, 1911, p. 1869.
Craig, C. F., and Nichols, H. J.: The Effect of the Ingestion of Alcohol on the Result of the Complement Fixation Test in Syphilis, THE JOURNAL, Aug. 5, 1911, p. 474.
Guggenheimer, H.: Influence of Temperature on the Wassermann Reaction, *München. med. Wchnschr.*, June 27, 1911; abstr. in THE JOURNAL, Aug. 5, 1911, p. 519.
Black, J. H.: Experience with Noguchi Modification of Wassermann Reaction, *Texas State Jour. Med.*, October, 1911; abstr. in THE JOURNAL, Nov. 4, 1911, p. 1566.
Munk, F.: Antigens for the Wassermann Reaction, *Deutsch. med. Wchnschr.*, May 9, 1912.
Keidel, A.: A Simple Bleeding-Tube for Obtaining Specimens for the Wassermann Reaction, THE JOURNAL, May 25, 1912, p. 1579.
Dexter, R., and Cummer, C. L.: Occurrence of Native Antisheep Amboceptor in Human Serum and Its Importance in Performance of Wassermann Reaction, *Arch. Int. Med.*, May 15, 1912; abstr. in THE JOURNAL, June 15, 1912, p. 1880.
Gammeitoft, S. A.: Modified Technic for Wassermann Reaction, *Hospitalstid.*, April 12, 1912.
Ballenger and Elder: Procuring Blood for the Wassermann Reaction Test, THE JOURNAL, June 8, 1912, p. 1773.

LANGENBECK'S TRIANGLE, AND COLORING MATTER OF THE LOBSTER

To the Editor:—Will you kindly describe, if convenient: (1) Langenbeck's triangle, and its application in surgery; (2) the chemical change causing the change of color from black to red in crustaceans, on boiling.

R. S. PORTER, M.D., Fort William H. Seward, Alaska.

ANSWER.—1. Langenbeck's triangle is formed by lines drawn (*a*) from the anterior superior spine of the ilium to the outer side of the great trochanter, (*b*) to the surgical neck of the femur, (*c*) a line connecting the first two. The area enclosed by these lines is the hip-joint area.

2. According to the researches of McMunn, a substance called cyano-crystalline is found in the shell of the lobster. This substance turns red on boiling or by the action of acids. So far as we know, the reason of this change of color has not been determined.

INSIGNIA FOR PHYSICIANS' AUTOMOBILES

To the Editor:—Has the American Medical Association or THE JOURNAL recommended any form of physician's mark for use on an automobile? If so, I would like a description of it. What is the common and ethical mark for this use? E. L. L.

ANSWER.—Our reply answers not only this correspondent but also a number of other inquiries recently received concerning an automobile emblem. The American Medical Association has not adopted a mark for members to use on their machines. THE JOURNAL, Aug. 27, 1910, p. 795, replying to a query concerning the restriction of the use of the red cross and suggesting a green cross as an insignia for physicians' automobiles said in part as follows: "The executive committee of the American National Red Cross . . . requested all hospitals, health departments and like institutions to refrain from the use of the red cross in order to avoid confusion, and suggested as a substitute some other insignia, such as a green Saint Andrew's cross on a white ground. Congress, at its last session, restricted the use of the red cross to the American National Red Cross . . . and prohibited organizations from adopting this emblem after the passage of the law. . . . The green St. Andrew's cross on a white ground would be a proper badge for physicians' automobiles, hospital ambulances, etc., and could be adopted by agreement with authorities." A manufacturer advertises an emblem of this design in THE JOURNAL.

While the Association has not approved any mark for physicians' automobiles, many local physicians' automobile clubs have designs of their own which are recognized and accorded certain privileges by the local police authorities. A general emblem would serve only to indicate that the owner of the car is a physician.

PASTIA'S SCARLET FEVER SIGN

To the Editor:—Please describe Pastia's sign in scarlet fever referred to in Taubles' series as reported in THE JOURNAL, August 3, p. 397. M. W. LAYMAN, M.D., Williamsport, Md.

ANSWER.—Taubles states that Pastia's sign, as described by the discoverer, consists in an intense, continuous linear exanthem localized in the skin folds of the anterior aspect of the elbow. It is of a deep rose color, becoming darker in time and after several days even ecchymotic. The lines, usually from two to four, vary in number, and the skin between the lines presents the rash that is seen on the rest of the body. To this description Taubles adds that, first, the sign is occasionally visible in some or all of the other flexures, as the base of the neck, wrist, axilla, groin, nates, popliteal folds; and, secondly, the red stripes of the sign can be caused to stand out in striking contrast by exerting gentle pressure on the skin and then quickly removing the pressure, whereupon the skin surrounding the lines will be temporarily pale and the lines will be seen as intensely red.

TREATMENT OF FURUNCLES

To the Editor:—Is there any preventive for yearly crops of furuncles? They come at all seasons and there seem to be no predisposing causes. F. B. BAIRD, M.D., Philadelphia.

ANSWER.—We know of no preventive of recurring furuncles, unless they can be shown to be due to some definite and removable cause. Diabetes, nephritis and anemia have frequently a predisposing influence and should receive appropriate general treatment. The drinking of fresh brewer's yeast, from one to two ounces daily in several doses, is sometimes beneficial. Careful cleansing of the skin and protection from irritation are appropriate. We would suggest the use of an autogenous vaccine prepared from the discharge of the furuncles. Individual furuncles can be aborted by extracting the central hair and introducing as deep into the follicle as possible without causing pain a fine probe which has been dipped into pure phenol (carbolic acid), and then touching the apex of the boil with liquid phenol; or, better, by injecting with a hypodermic syringe a drop of liquefied phenol into the base of the boil.

DRESSING FOR LABORATORY DESKS

To the Editor:—I saw in THE JOURNAL two or three years ago, a formula for dressing the tops of wooden desks in a chemical laboratory so as to make them resistant to ordinary reagents. I cannot find the article now. Please give me the reference.

SAMUEL CODMAN, Hwaiyuan Anhwei, China.

ANSWER.—The formula for the dressing for laboratory desks is described in THE JOURNAL, May 7, 1910, p. 1562.

TREATMENT OF RHUS POISONING

To the Editor:—Some time ago there was quite a discussion in THE JOURNAL on poison-ivy and the treatment best suited to counteract the effects of it, in which some useless and some harmful advice was given by various writers (Sept. 30, 1911, p. 1151; Oct. 14, 1911, p. 1304, and Oct. 21, 1911, p. 1385). I would call the attention of the profession to a small book written and published by Annie Oakes Huntington, Glen Road, Jamaica Plain, Mass. This book covers the subject thoroughly and effectively, and will be of use to anyone interested in the subject. Its cost is 75 cents.

On treatment I will quote: "Soap, water and a scrubbing-brush seem altogether too simple a method for treatment to advise for the painful eruption brought on by handling these two poisonous plants (poison-ivy and swamp sumach), yet if we begin with this old-fashioned country remedy and study the various methods of treatment from one generation to another, we return at last through the most recent scientific investigations to our original starting-point. The only effective measures are preventive ones; the only remedy is a wash which mechanically removes the poisonous oil from the skin. In this lies the sum and substance of the entire method of treatment."

Your patients will much appreciate your having the information contained in this little volume of fifty-three pages when they call on you for treatment of skin irritation caused by exposure to poison-ivy. ANDREW WILSON, M.D., Wheeling, W. Va.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ILLINOIS: Coliseum Annex, Chicago, September 24-26. Sec., Dr. James A. Egan, Springfield.

IOWA: Capitol Bldg., Des Moines, September 11-13. Sec., Dr. Guilford H. Sumner, State House.

MASSACHUSETTS: State House, Boston, September 10-12. Sec., Dr. Edwin B. Harvey, Room 159, State House.

NEW YORK: September 17-20. Chief of Examinations Division, Mr. Harlan H. Horner, Department of Education, Albany.

Delaware June Report

Dr. Henry W. Briggs, Secretary of the Medical Council of Delaware, reports the written examinations held by the regular and homeopathic boards at Dover and Wilmington, June 18-20, 1912. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. At the examination held by the regular board at Dover, the total number of candidates examined was 16 of whom 15 passed and 1 failed. Five candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
State University of Iowa, College of Medicine	(1912)	85.8
Baltimore Medical College	(1906)	76.5
Maryland Medical College	(1912)	85
University of Pennsylvania	(1881)	81.7; (1912) 84.7, 86.7
Medico-Chirurgical College, Philadelphia	(1912)	88.4
Jefferson Medical College (1890) 78; (1912) 80, 86.7, 86.7, 87.8, 88.2, 93.5.		
Woman's Medical College of Pennsylvania	(1911)	86

FAILED

University of Naples, Italy	(1906)	72.4

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Baltimore	(1904)	Maryland
Johns Hopkins University, Baltimore	(1909)	Maryland
University of Pennsylvania (1882) (1905) Pennsylvania;	(1889)	New York

At the examination held by the homeopathic board at Wilmington, two candidates were licensed, one by examination and one through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Hahnemann Medical College of Philadelphia	(1912)	92

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Hahnemann Medical College of Philadelphia	(1907)	Penna.

Louisiana May Report

Dr. A. B. Brown, secretary of the Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, May 30 to June 1, 1912. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 123, of whom 94 passed and 29 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Alabama (1911) 84.3, 93.7; (1912) 80, 82.1, 82.5, 84.1, 85.2.		
Tulane University of Louisiana (1910) 80.8; (1912) 75, 75.2, 76.4, 76.6, 77, 77.5, 77.7, 77.8, 78.2, 78.3, 78.7, 79.1, 79.1, 79.3, 79.7, 80.6, 80.8, 81.1, 81.1, 81.2, 81.3, 81.5, 81.5, 81.6, 81.6, 81.9, 81.9, 82, 82.5, 82.9, 83.1, 83.2, 83.2, 83.2, 83.2, 83.3, 83.4, 83.4, 83.4, 83.5, 83.6, 83.8, 84, 84.4, 84.8, 85.3, 85.3, 85.4, 86.1, 86.1, 86.8, 87.2, 87.3, 87.6, 87.8, 88.1, 88.2, 88.6, 88.9, 89.1, 89.2, 89.3, 89.8, 90.2, 90.4, 91.2, 91.5, 91.7, 91.9, 92.6, 95.		
Memphis Hospital Medical College (1902) 79.2; (1910) 76.5; (1911) 75.2, 81.8; (1912) 75.5, 78, 78.2, 79.8, 84.2, 84.4, 84.8.		
Vanderbilt University	(1912)	75.8
Meharry Medical College	(1912)	79.2, 81.6
University of Virginia	(1901)	86.9

FAILED

Atlanta School of Medicine	(1911)	74.1
University of Louisville	(1909)	65.2; (1910) 51.3
Louisville and Hospital Medical College	(1908)	62.5
Tulane University of Louisiana (1898) 56; (1902) 67.4; (1912) 73.2, 73.6, 74, 74.4.		
St. Louis College of Physicians and Surgeons	(1907)	68.8
Memphis Hospital Medical College (1899) 51.5; (1908) 57.2, 61.9; (1910) 70.8; (1911) 37.5, 48.2, 59.8, 61.9, 64; (1912) 17.3.*, 51.9, 64.6, 66.7 (1912).†		
University of Tennessee	(1912)	65.6, 71.75
College of Physicians and Surgeons, Memphis	(1911)	53.2
Fort Worth School of Medicine	(1911)	61.7

* Did not complete examination.

† Caught with book during anatomy examination.

The following questions were asked:

ANATOMY

1. How many tarsal bones are there? Name them. 2. Describe briefly the cervical vertebræ. 3. Give origin and insertion of pectoralis minor, corico brachialis, pronator radii teres, sartorius and biceps. 4. Name the branches of abdominal aorta. 5. Give the relations of the femoral vessels in Scarpa's triangle. 6. Describe the blood-supply of the cecum and vermiform appendix. 7. What are the relations of the deep epigastric artery of (a) an oblique inguinal hernia, (b) a direct inguinal hernia? 8. What is Gimbernat's ligament? 9. Tell briefly what you know about the fifth cranial nerve. 10. Name and describe briefly the membranes which surround the spinal cord.

PHYSIOLOGY

1. Describe the anatomic and histologic structure of (a) the neuronal cell-body, (b) the axone. (c) What is the function of each structure? 2. What is the tactile sense? (a) Where is it most acute? (b) What is its cognitional value? (c) What is its relation to the central nervous system? 3. Give the general characteristics of urine as to (a) quantity, (b) reaction, (c) specific gravity, (d) color. When do these vary? 4. Name the enzymes of the pancreatic juice and describe separately the part each plays in digestion. 5. What factors, chemical and physical, are concerned in gastric digestion? 6. Describe briefly the chemical changes, the thermal changes, the electric changes, changes of form, in muscular tissues, when in a state of activity. 7. What is the character of contraction (a) in non-striated involuntary muscle; (b) in striated voluntary muscles? (c) Give examples of each. 8. What are the functions of the blood plasma and of the blood corpuscles? 9. Describe the types of normal respiration and how influenced by (a) age, (b) sex, (c) race. 10. What forces are involved in the circulation of the blood in the arteries and in the capillaries?

PATHOLOGY

1. What post-mortem changes occur in the tissues? 2. What is the cause of a rise in body temperature? Explain the mechanism. 3. Define atrophy. Give the varieties of atrophy. 4. Differentiate fatty infiltration and fatty degeneration. 5. Define hyperemia, anemia, leukemia. 6. Explain what is meant by the terms physiologic and pathologic leukocytosis, respectively. State whether a leukocytosis is present in the following diseases: typhoid fever, malarial fever, appendicitis, acute miliary tuberculosis. 7. What is an embolus? Mention frequent sources of emboli and state the sequels of embolism. 8. Describe, in the order of their occurrence, the cardinal signs of inflammation and explain them. State also the terminations of inflammation. 9. Describe the reparative processes following the fracture of a long bone. 10. What is the line of demarcation in gangrene?

CHEMISTRY

1. What is the chemical composition of bone? 2. Mention six elements used in medicine and give their symbols and atomic weight. 3. Define (a) analysis, (b) synthesis, (c) cohesion, (d) chemical affinity. 4. Convert 67 degrees Fahrenheit into Centigrade. 5. What is the process termed when oxygen unites with another element? 5. Give a test for diacetic acid and state its clinical significance. 7. What is Ehrlich's diazo-reaction and state its clinical significance. 8. Give a test for indican and state its clinical significance. 9. Give an emergency method of preparing ferric hydroxid for use in a case of poisoning by arsenic. 10. Give a test for HCl in the gastric contents.

THERAPEUTICS

1. What are digestants? (a) Name the principal official digestants. (b) What are the therapeutic uses of each? 2. What are the indications and contra-indications to the use of opium? 3. What is serum therapy, and how would you treat a severe case of laryngeal diphtheria and what would be your prophylaxis in a suspected case of tetanus? 4. What are the therapeutic uses, locally and internally, of atropin sulphate? 5. Mention four ways in which antipyretics reduce body temperature. 6. How would you treat a case of arteriosclerosis? 7. Give the therapeutic uses of the different preparations of mercury. 8. How would you treat a case of syphilis in its different stages? 9. What are the indications and contra-indications in the use of ergot? 10. How would you treat a case of hookworm disease?

PHYSICAL DIAGNOSIS

1. Define cyanosis and give its causes. 2. Define vocal fremitus and state its significance in pulmonary disease. 3. What are the essentially different sounds given by percussion over healthy lung? 4. What are the physical signs of pulmonary solidification? 5. In what condition does bronchial breathing take the place of vesicular breathing? 6. Differentiate organic and functional heart murmurs. 7. What are the causes and treatment of palpitation of the heart? 8. What are the causes of endocarditis? 9. Why is dyspnea caused by disorganization of the mitral valves? 10. What are the signs of impending death?

SURGERY

1. How would you treat a compound fracture, say of the tibia? 2. What is talipes equino-varus? Give treatment. 3. Give diagnosis and treatment of epithelioma of the lower lip. 4. Give symptoms and treatment of ulcer of the pylorus. 5. A woman comes to you with a lump in her breast. What steps would you take in order to make a diagnosis and how would you treat it? 6. Give signs, symptoms and treatment of aneurysm of the popliteal artery. 7. What is a wen? How would you treat it? 8. What is varicocele? How would you treat it? 9. Give symptoms and treatment of

enlarged prostate. 10. Describe briefly the Bassini operation for inguinal hernia.

OBSTETRICS

1. Describe the fetal circulation. 2. What are the conjugate and transverse diameters of the inlet and outlet of the pelvis? Give the anatomical points of the measurements. 3. Enumerate the causes of delayed labor, (b) the dangers, (c) management. 4. State the causes of post-partum hemorrhage and the treatment. 5. Describe the third stage of labor, the dangers which attend it and the methods of conducting it. 6. Mention two conditions liable to cause prolapse of the cord and the treatment for one condition mentioned. 7. What can be determined by external palpation of the pregnant woman at term? 8. Give causes, (b) diagnosis, (c) mechanism and (d) management of a face presentation. 9. Name the diameters of the fetal head. 10. Describe an embryo at the second month.

GYNECOLOGY

1. Give a description of the physiology of menstruation. 2. What are the causes of hemorrhage from the non-pregnant uterus? Give the treatment for any two of the number which you mention. 3. What is urethral caruncle and its treatment? 4. Give the etiology and treatment of acute general cystitis. 5. Why is gonorrhea in women a grave disease? 6. Define salpingitis and state its causes and pathology. 7. What are the most common benign growths found in the cavity of the uterus? 8. Give the symptoms of ovarian cyst. What is the treatment? 9. Give the physical signs of cancer of the uterus at an early stage. 10. Describe the technic for supravaginal hysterectomy.

HYGIENE

1. Name and describe briefly the different methods of domestic water purification. 2. What are the most important foreign ingredients, organic and inorganic, in water? 3. What are the major sanitary details in the production and marketing of pure milk? 4. What is Pasteurization of milk and what are its advantages and disadvantages? 5. What are the relative merits of formaldehyd and sulphur dioxid as disinfectants, and in what form and in what manner are they applied? 6. What are the sources of the impurities in air, and what relation do these impurities bear to health? 7. What sanitary measures should be instituted in the care of a typhoid patient? 8. What is understood by (a) natural immunity, (b) acquired immunity? (c) Give examples. (d) What are the causes of immunity? 9. How is tuberculosis detected in the cow? 10. What diseases of the (a) skin, (b) spine, (c) respiratory tract, (d) digestive system, (e) throat, are especially prevalent in school children, and how would you detect eye-strain, adenoids, trachoma and infectious catarrhal conjunctivitis?

North Carolina June Report

Dr. Benjamin K. Hays, secretary of the North Carolina State Board of Medical Examiners, reports the written and oral examination held at Hendersonville, June 11, 1912. The number of subjects examined in was 14; percentage required to pass, 80, and not less than 35 in any one branch. The total number of candidates examined was 124, of whom 87 passed and 37 failed. Twenty-two candidates were licensed through reciprocity. The following colleges were represented:

PASSED College	Year Grad.	Total No. Examined.
George Washington University	(1912)	1
Howard University, Washington, D. C.	(1910)	1
Atlanta School of Medicine	(1912)	1
Atlanta College of Physicians and Surgeons	(1911)	1
University of Louisville	(1911) (1912)	2
Indiana Medical College, School of Medicine of Purdue University	(1906)	1*
University of Maryland	(1907, 1) (1912, 9)	10
Johns Hopkins University	(1906)	1
Tulane University of Louisiana	(1912)	2
Maryland Medical College	(1912)	1
Marion-Sims College of Medicine	(1900)	1
North Carolina Medical College	(1910, 2) (1912, 18)	20
Leonard Medical School	(1912)	8
Long Island College Hospital	(1909)	1
Jefferson Medical College	(1912)	13
Woman's Medical College of Pennsylvania	(1912)	1
Medical College of the State of South Carolina	(1912)	1
Knoxville Medical College	(1903)	1
Tennessee Medical College	(1904)	1
Vanderbilt University	(1912)	1
University of Virginia	(1910) (1911) (1912)	3
Medical College of Virginia	(1910, 1) (1912, 3)	4
University Coll. of Med., Richmond	(1911, 1) (1912, 10)	11
FAILED		
Howard University, Washington, D. C.	(1911)	1
George Washington University	(1911)	1
College of Physicians and Surgeons, Baltimore	(1910)	1
University of Maryland	(1912)	2
College of Physicians and Surgeons, Boston	(1909)	1
North Carolina Medical College	(1905, 1) (1912, 5)	6
Leonard School of Med.	(1910, 1) (1911, 5) (1912, 6)	12
Lincoln Memorial University	(1911) (1912)	2
Chattanooga Medical College	(1903) (1908)	2
Meharry Medical College	(1912)	2
University of West Tennessee	(1912)	1
Knoxville Medical College	(1908)	1
University of Nashville	(1908)	1
University of the South	(1908)*	1
Medical College of Virginia	(1905) (1910)	2
University College of Medicine, Richmond	(1911)	1

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
George Washington University	(1907)	Dist. Colum.
Columbian College, Med. Dept., Washington, D. C.	(1900)	Dist. Colum.
Atlanta School of Medicine	(1906)	Georgia
Medical College of Georgia	(1890)	Georgia
Southern Medical College, Atlanta	(1894)	Georgia
Rush Medical College	(1904)	Illinois
Baltimore Medical College	(1905)	Dist. Colum.
Harvard Medical School	(1888)	Mass.
University of Maryland	(1904) (1909)	Maryland
Tennessee Medical College	(1900)	Tennessee
Cornell University Medical College	(1905)	Mississippi
University and Bellevue Hospital Medical College	(1902)	New York
Jefferson Medical College (1876) Pennsylvania; (1909) Ohio; (1909) Oklahoma; (1911) Delaware.		
Chattanooga Medical College	(1904)	Tennessee
University of Tennessee	(1908)	S. Carolina
Vanderbilt University	(1908)	Washington
University of Virginia	(1888)	New Jersey
Medical College of Virginia	(1908)	Virginia

* Took oral examination.

Wisconsin May Report

Dr. John M. Beffel, Secretary of the Wisconsin State Board of Medical Examiners, reports the written examination held at Milwaukee, May 28-30, 1912. The number of subjects examined in was 20; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 59 of whom 48 passed, 6 failed and 5 were conditioned. Twenty-one candidates were licensed through reciprocity. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Bennett Medical College	(1912)	75, 82
Northwestern University Medical School	(1910)	79
Rush Medical College	(1911) 92; (1912)	81
College of Physicians and Surgeons, Chicago	(1912)	85
Washington University, St. Louis	(1911)	80
Jefferson Medical College	(1911)	80
Marquette University, Milwaukee	1911) 76, 78; (1912)	75, 76, 78, 78, 79, 79, 79, 80, 80, 80, 81, 81, 81, 83, 83, 84, 84, 85, 85, 85, 86, 86, 87, 88, 88, 89, 90.
Wisconsin College of Physicians and Surgeons	(1912)	81, 83, 84, 86, 85, 87, 87, 87, 88.
Queen's University, Kingston, Ontario	(1912)	82
University of Toronto, Ontario	(1905)	82
FAILED		
Bennett Medical College	(1911)	65
Sioux City College of Medicine	(1906)	65
Marquette University, Milwaukee	(1912)	65, 68, 73
Wisconsin College of Physicians and Surgeons	(1912)	72
CONDITIONED		
Chicago College of Medicine and Surgery	(1910)	79 *
Bennett Medical College	(1912)	76,† 80 †
Hahnemann Medical College and Hospital, Chicago	(1910)	80 †
University of Pittsburgh	(1908)	81 †

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Yale Medical School	(1908)	Vermont
Hahnemann Medical College and Hospital, Chicago	(1888) (1907)	Iowa; Illinois.
Northwestern University Medical School	(1890) (1902) (1909, 2) (1910)	Illinois
Rush Medical College, Chicago	(1907) (1909) (1911)	Illinois
College of Medicine and Surgery, Chicago	(1906)	Illinois
College of Phys. and Surg. Chicago	(1906) (1910)	Illinois
Chicago College of Med. and Surg.	(1908) (1910)	Illinois
Drake University	(1906)	Iowa
State University of Iowa, College of Medicine	(1911)	Iowa
Sioux City College of Medicine	(1904)	Iowa
University of Minnesota, Coll. of Med. and Surg.	(1905)	Minnesota
Medical College of Virginia	(1909)	Virginia

* Conditioned in anatomy and chemistry. † Conditioned in pathology, bacteriology and histology.

Wisconsin July Reciprocity Report

Dr. John M. Beffel, secretary of the Wisconsin State Board of Medical Examiners, reports that at the meeting held at Madison, July 9-11, 1912, eleven candidates were licensed through reciprocity including one osteopath. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University Medical School	(1908, 2) (1910) (1911)	Illinois.
Bennett Medical College	(1910)	Illinois
Drake University	(1883)	Illinois
Hospital College of Medicine, Louisville	(1892)	Indiana
University of Michigan, Dept. of Med. and Surg.	(1911)	Michigan
Jefferson Medical College	(1862)	Illinois
Marquette University, Milwaukee	(1908)	N. Dakota

Miscellany

What Is the County Medical Society and Why Should We Join It?

Men in the same pursuit often feel the need to get together to discuss common problems, to exchange views and experiences, to gain inspiration. It is this necessity that brings business men and professional men together. What profession has more problems to meet every hour of the day than the medical profession? First the problems pertaining to medical practice in general. The constant changes in the science and art of practice, the learning and unlearning of supposed truths, the ever shifting field of practice, the transitions from old to new conceptions—each gives rise to new problems which must be solved and can be solved only by free discussion and interchange of ideas and experiences. The young doctor brings his theory and the old doctor brings his mature experience, and they swap, each profiting by the deal. The county society, therefore, is the doctors' exchange, and a seat in this exchange should be as valuable as in the stock market, for a profitable deal often means financial success. And, by the way, this is the only kind of stock—the stock of knowledge—that the doctors should deal in, for every other kind usually spells r-u-i-n.

Business men often get together to protect their guild against unfair competition or other conditions inimical to their business interests. Medical practice is a business and requires the same kind of guardianship. The underpaid doctor, the "cheap" doctor, the lodge doctor, the commercial school, the school with a low standard of medical education, the quack, the faker, the patent medicine man, the quack druggist—these are the enemies of the legitimate practitioner, and these enemies we can fight only by combining our forces. The county society is the headquarters of our fighting army.

Intelligent, broad-minded men often get together to discuss and take action on matters pertaining to public welfare. They take up politics, industrial conditions and other social problems and by their discussion and cooperative action frequently mold public opinion and help to direct public policy. Is there any other profession that can boast of a larger number of public-spirited men than the medical profession? Who looks after the health of the community? Who makes the town and the city habitable? Who saves the babies from untimely death? The doctor. Who transformed pest-holes into summer resorts? Who made commerce between these same pest-holes and the rest of the world possible? Who brought about the successful issue of the greatest engineering undertaking the world has ever witnessed? The doctor. With such great achievements to our credit, it is only proper that the doctors should get together to encourage this social service.

The county medical society should be a civic center.

Men of like tastes often get together for social intercourse. During their busy hours they have no time or opportunity to meet in a social way. To fill this gap, clubs of various kinds are formed. The doctors, more than any other people, stand in need of social intercourse. The opportunities of meeting for a friendly chat are so few that unless satisfactory arrangements are made, they may go through life perfect strangers to each other. Such opportunities are provided by the county medical society.

The county medical society should be the social center.

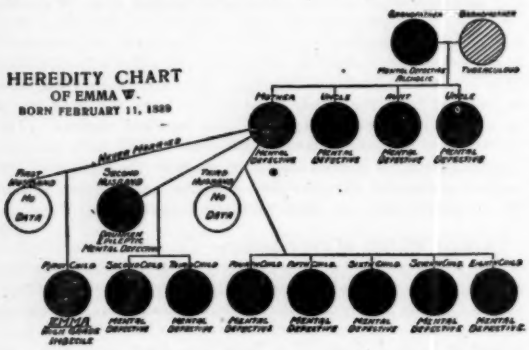
To perfect the organization of the doctors in this country, the county medical society was made the unit. Therefore, no doctor can belong to the American Medical Association unless he is a member in good standing of his county society. As a matter of fact the American Medical Association has no independent existence. It is the association of county and state societies which control the policies of the Association through their delegates—truly, a democratic arrangement. Every doctor, therefore, no matter how humble, may help to determine the policies of this great medical body by his influence in the county society.—*Delaware State Medical Journal.*

Examination of Rats for Plague.—Dr. G. W. McCoy (*Public Health Reports*, July 26, 1912), gives the technic for the examination of rats for evidence of the plague. He quotes the Indian Plague Commission to the effect that the naked eye is markedly superior to the microscopic method in the diagnosis, for in all except a few atypical cases the plague lesions are characteristic. The most noticeable post-mortem appearance is the engorgement of the subcutaneous blood-vessels, together with a diffuse pink color of the subcutaneous muscles, which have a peculiar dry, waxy translucency, usually distributed over the whole surface of the body but occasionally confined to the side on which the primary bubo is found. The bubo, when present in typical form, is sufficient for diagnosis. Marked injection surrounds it and sometimes there is hemorrhagic infiltration. The gland itself feels firm but is usually caseous or occasionally hemorrhagic. In the liver an apparent fatty change is encountered, which is found to be due to necrosis. White spots of the size of a pin-point are sometimes found which give the surface of the organ a stippled appearance as if dusted over with gray pepper. The spleen is markedly enlarged, firm, friable, rather dark in color, and occasionally presents small granules under the capsule. Pleural effusion is a sign of great importance when associated with other suspicious lesions. It is serous in character, usually clear, though occasionally blood-stained. Effusion is rare in other diseases in rats. Plague infection may be present without recognizable gross lesions, perhaps once or twice in 100 cases. Inoculations in such instances may demonstrate *B. pestis*. Microscopic examination, in doubtful cases, is important, as is the making of cultures. The method of examination is as follows: The rats are immersed in any convenient antiseptic to kill fleas and other ectoparasites. They are then nailed by their feet to a shingle and the skin is reflected from the whole front of the body and neck so as to expose the cervical, axillary and inguinal regions. The thoracic and abdominal cavities are then opened with scissors. Careful search for buboes should be made in the regions of the various peripheral lymph-nodes, and the lungs, liver, spleen, etc., examined for the signs mentioned above.

Physical Welfare of Policyholders.—The issue as to whether or not it is possible for each company to do something toward promoting the physical welfare of its policyholders is squarely before the life insurance managements, and, after reasonable investigation and consideration, should be squarely met, according to E. L. Fisk (*New York Med. Jour.*, July 13). An educational campaign can be economically and effectively carried on by any company. The mere facts presented in a health bulletin may of themselves be without power to influence the average individual, but the practical business idea behind the issuance of the bulletin may arrest attention and give to the facts a potent suggestive value. Bad living habits and neglect of the body until disease becomes obvious are the results, partly of ignorance, and partly of fashion and the suggestion of example. If the life companies persistently pound into the brains of 22,000,000 people in this country the simple, elementary principles that underlie right living and form the basis of preventive medicine in its broadest sense, they will come very near to governing the fashion in these matters. Not only will they reach the individual policyholder, but they should reach and activate those thinking groups which, in every community, so largely mold and guide public opinion. By the systematic dissemination of information, much of which is locked up in medical literature and reaches the public fitfully, and often in unscientific and exaggerated, or unintelligible form, we may bring about a condition where ignorance along certain lines will be regarded as shameful, and many unhealthful practices will be looked on as implying such ignorance. The life companies have already accumulated valuable information regarding the influence of living habits and various impairments which lower the resistance to disease. A vast mine of information in their possession is now being worked over, analyzed, and interpreted according to scientific standards. By imparting such information to policyholders as it becomes available, much that is debatable in matters of personal hygiene could

be cleared up, and the newly born science of medical selection would enjoy the inestimable privilege of growing up side by side with the still young science of preventive medicine, the giant of the future. By cooperation with public health authorities, by urging policyholders to support health legislation, and to obey existing public health laws, which can never be enforced without the consent of an enlightened public mind, by promoting health leagues in the thousands of communities where policyholders, examiners, and agents are available for cooperation, the death rate among insured lives, as well as that in the general population, would be favorably affected. Education and organization could move abreast. All such activities should encourage a closer relationship between policyholder and company and diminish the waste to the insuring public and to the companies, through excessive lapsing and twisting of policies, besides increasing the volume of new business by popularizing insurance, and rendering it actually "life" insurance, as well as "death" insurance.

The Burden of the Feeble-Minded.—The history of Emma W., at one time an inmate of Letchworth Village, a New York institution for the feeble-minded, should be convincing that it is bad policy to let the feeble-minded drift in and out of the almshouse; that it is but humanity and economy to segregate them, and to strike at the causes of mental defect. Emma W. came to life in an almshouse, stamped with illegitimacy and feeble-mindedness. Her family's record reads: mother, two brothers, and a sister feeble-minded; mother's



father feeble-minded and mother's mother tuberculous. When a second child was expected the mother was induced by well-meaning people to marry the father, who was a drunken epileptic. Two children were born. Still later the same well-meaning people aided her to get a divorce in order to marry the father of another child about to be born. Since then four more have been born. All of these children are feeble-minded. Entire family, with exception of the oldest child, is at large. The accompanying chart, taken from *The Survey*, March 2, 1912, shows graphically her heredity.

Method of Examining Feces for Typhoid Bacilli.—Place about 5 gm. of the feces in a conical glass or other suitable vessel, add 15 or 20 c.c. of sterile physiologic salt solution or bouillon and agitate. Let stand one-half to one hour either at room temperature or, preferably, at incubator temperature (37 C.) in order to permit the heavy particles to settle. Deposit one or two drops of the supernatant fluid in the center of an Endo plate. With a right-angled glass rod distribute the drop over the entire surface of the plate and then rub the rod over the surface of a second, third, fourth, and fifth Endo plate. By carrying the spreader over the surfaces of several plates in this way, one or two of the plates will furnish abundant but sufficiently isolated colonies to permit "fishing." After inoculation place the plates inverted in the incubator, leave there for from twenty to twenty-four hours, and then examine. On the plates colonies of typhoid and paratyphoid bacilli will be transparent, colorless, dewdrop-like and usually from 1 to 2 mm. in diameter; while colonies of colon bacilli will be deep red, showing sometimes on the surface a sheen from precipitation of the fuchsin, and measure usually from 3 to 4 mm. in diameter. If typhoid-like colonies appear on the plates fish five or six of them, and inoculate tubes of Russell's medium in the following manner:

Touch the colony with a sterilized platinum needle, make two streaks along the slanted surface of the medium in the tube and then stab the needle down through the center of the block of medium to the bottom of the tube. Incubate the inoculated tubes of Russell's medium for from twenty to twenty-four hours and then examine.

On Russell's medium inoculated in this way typhoid bacilli leave the surface of the medium blue but change the medium in the butt of the tube to a bright red; colon bacilli redden both the surface and the depths of the medium and cause the formation of gas bubbles throughout the depths of the medium; paratyphoid bacilli leave the surface blue, but produce redness and gas bubbles in the butt of the tube; dysentery bacilli leave the surface blue and change the medium in the butt of the tube to claret color quite readily distinguishable from the brighter and more pronounced redness produced by typhoid bacilli.—L. L. Lumsden and A. M. Stimson in *Public Health Reports.*

French Hospital Ship for Fisherman on The Banks.—*La Société des Oeuvres de Mer*, with headquarters in Paris, maintains a hospital ship, the *Saint François d'Assise*, for the benefit of the French fishermen on the Newfoundland Banks It is a 600 ton steamship, carries a crew of twenty-seven men, including a chaplain, and a physician, and has beds for thirty-six patients with additional accommodations for shipwrecked sailors or patients suffering from minor injuries. The ship leaves France in the spring soon after the annual exodus of fishermen to the banks and cruises in that region during the summer. Patients are taken aboard and cared for, and from time to time the boat puts into St. Pierre where patients can be transferred to the government hospital. At the close of the fishing season in September it returns to France. In addition to the work of relieving the sick, the hospital ship sometimes picks up wrecked crews and acts as a floating post-office for the fishing fleet. While chiefly interested in the welfare of French fishermen, the society's hospital ship ministers alike to all nationalities on the banks. No charge is made for medical services, or supplies. In 1911, 1,143 vessels were spoken; seventy patients were admitted to the hospital; 420 consultations at sea were held; medicines were distributed in 253 instances; fourteen shipwrecked seamen were picked up; 228 foreign vessels were visited by the *Saint François d'Assise* and its sister ship, which cruises on the Iceland fishing ground and the North Sea. Of these sixteen were American vessels. The expenses are met by a small subsidy from the French government and by private subscriptions.

Medicine in China.—Dr. M. R. Edwards, the head of the Shanghai branch of the Harvard Medical School, found on investigation scarcely more than 2,000 trained native physicians and not more than 1,000 foreign physicians in the whole empire. In the above-mentioned institution a department of preventive medicine will educate native public health officials, who alone can best overcome the prejudices of the ignorant classes in time of pestilence and epidemics. A research laboratory will also be established where the diseases of the Orient will be studied by a group of men devoting their whole time to this work. It is also expected that the laboratories will offer facilities for research to men coming for independent study from other countries, and will aim in every way possible to assist in the development and advance of medical science throughout China. This new Harvard school marks a distinct advance in the facilities for obtaining a sound medical education offered to Chinese. It has, however, been foreshadowed by the Union Medical schools in Peking and Shantung in the north and by the University of Pennsylvania school in Canton and the Hong Kong University. The teaching in the new Harvard school and also that in Hong Kong University is conducted in English. The requirements for admission are a thorough knowledge of English and an elementary scientific training.

Book Notices

UROLOGY. The Diseases of the Urinary Tract in Men and Women. A Text-Book for Practitioners and Students. By Ramon Guiteras, M.D., Professor of Genito-Urinary Surgery, New York Post-Graduate Medical School. Two Volumes. Cloth. Price, $12. Illustrated. New York: D. Appleton & Company, 1912.

The first volume of this work is devoted largely to general subjects such as the history of urology, the anatomy of the parts concerned, general arrangement of a specialist's office, care of instruments, history-taking, filing of records, methods of examination, general symptomatology, urinalysis, etc. One occasionally fails to find mention of some of the methods of examination, as, for instance, some of the color-tests of functional capacity of the kidneys, but as a rule the subjects are very well covered and the author deserves credit for the thorough and painstaking care which he has given to the minutest details—details which are of so much importance to every physician who wishes to succeed. There are so few who are able to develop unaided good systems of their own that this part of the work will be greatly appreciated.

In the last few chapters of this volume are discussed the anomalies of the kidney and ureter, movable kidney, kidney stone, tuberculosis of the kidney and operative surgery of the kidney. The second volume is devoted to the diseases of the bladder, the prostate, the urethra and its appendages, the scrotum, the cord, the testicles and the seminal vesicles; it includes a final chapter on lues. Throughout this volume the same attention to details is observed as in the first one.

While the views and work of others are not slighted, the author is constantly relating how and why he does things and that should be the real reason for writing a book; not to tell how someone else does things, but how the author himself does them. He may do many things better than someone else and he may do some things not so well, but in any case there is no use writing a book to tell what someone else knows. The characteristic feature of the work is that the author tells his own story and tells it well. He is very frank at times in stating his own ability, as for instance under the treatment of vesical calculus we find the following: "In men litholapaxy is preferable, as it is less dangerous to the patient. I do not employ this method, for I do not feel that I am in sufficiently good practice to undertake the operation as I have so few cases of the kind." Notwithstanding his diffidence, he has illustrated and described the technic of the operation very clearly.

There are 943 illustrations, most of them original. The general practitioner who is constantly called on to treat this class of cases, as well as the specialist, will find this a valuable work.

SYNTHESE DER ZELLBAUSTEINE IN PFLANZE UND TIER. Lösung des Problems der künstlichen Darstellung der Nahrungsstoffe. Von Professor Dr. Emil Abderhalden, Direktor des Physiologischen Institutes der Universität zu Halle a. S. Paper. Price, 3.60 marks. Berlin: Julius Springer, 1912.

Perhaps the author of this work is most widely known by his investigation of the problem of the absorption and utilization of iron which refuted the hypothesis of Bunge that only organic iron compounds could be utilized by the economy and showed on the other hand that the organic compounds are first broken down by the digestive juices and the iron converted into the ionic condition before it can be utilized by the organism.

It was an extension of this work on the organic iron compounds that led him to the discoveries and speculations embodied in the present work. Starting with the known dependence of the animal organism on already formed material furnished by plants for the "building-stones" from which its cells are to be constructed, the author proceeds to show the specific character of the materials furnished by the plant and the equally specific although different products which form a part of the animal cell. It is evident that in order to build up the specific compounds characteristic of animal life, the animal organism must reduce the complex ingredients of the nutrition derived from the vegetable to simpler forms. Thus the complex carbohydrates represented by the different forms of starch are reduced to a simple monosaccharid, "glucose," before they are available for animal nutrition. In a similar way the animal organism takes fat of various composition, from various sources and after reducing it to glycerin and the various fatty acids, recombines it to make the fat peculiar to the individual animal. The same thing holds good for the proteins. They are broken up into their constituent amino-acids by the process of digestion. The protein of one animal will not fit the cell structure of another. Since it is evident that the organism uses the simple constituents of the protein molecule, it was of interest to determine if these "building-stones" could be found in the blood. Careful search of the blood and tissues failed to reveal the presence of these amino-acids. This leads the author to propose the hypothesis that the amino-acids are changed on absorption into the proteins of the blood by the agency of the intestinal epithelium. These new-formed proteins circulate in the blood as the common nutriment of the body cells. Each cell again digests the albumin molecule into the constituent amino-acids and from them reconstructs the specific protein which it needs for its own structure or to perform its special functions.

The relations of these processes are developed in various directions. The possibility of nourishing an animal completely on a simple mixture of glucose, fatty acids, glycerin, amino-acids and the products of digestion of nucleoproteins has been shown by experiment. The possibility of using such a mixture solves the problem of producing foodstuffs artificially, although the laboratory cannot yet compete economically with the vegetable world, and, as our author remarks, there would always remain the chance that by inadvertence one or other important building-stone might be forgotten in making the mixture.

In this monograph we have a very interesting and suggestive presentation of one of the important problems of science. It should be widely read and no doubt its influence in stimulating further research on this and allied subjects will be one of its greatest benefits.

NERVÖSE ANGSTZUSTÄNDE UND IHRE BEHANDLUNG. Von Dr. Wilhelm Stekel. Mit einem Vorworte von Professor Dr. Sigmund Freud. Second Edition. Paper. Price, 17 marks. Pp. 448. Berlin: Urban & Schwarzenberg, 1912.

This author, more Freudian than Freud himself, has often been the cause of bitter attacks against Freud's doctrines. And it cannot be denied that his statements are blunt—he means what he says and he says what he means. This volume is the first of a series devoted to disorders of the emotional and affective life, called by the author "parapathic diseases." In it he discusses anxiety-neurosis and anxiety-hysteria. His formula reads: "An individual who is unable to find his adequate and specific form of sexual satisfaction develops an anxiety-neurosis." Stekel is convinced that through the great activity of the wish-complexes there ensues a struggle between moral duty and erotic desire; the somatic and psychic conflict results in the building up of the clinical picture of the anxiety-neuroses. He is not certain that the anxiety is altogether a conversion of the sexual libido, as Freud maintains, or whether the latter only plays an important rôle in the production of the anxiety-neurosis. For Stekel there exists neither neurasthenia nor psychasthenia—only mental states capable of producing somatic disturbances in those who are predisposed thereto by heredity, environment, education, or the disorders of the internal secretions. In the clinical portion of the book he endeavors to explain every symptom on the basis of sexuality; after diligent search he always discovers infantile sexual experiences. For him every important symptom is the direct result of either unsatisfied or perverted sexual desire, among which he includes mental onanism and substitution-onanism—incest-fantasies. Anxiey, in short, is the fear of one's sexual libido, or a fear of the criminal ego.

The efforts of treatment in the anxiety-neuroses, according to Stekel, must be directed toward weakening sexual excitement and inhibiting criminality by transferring the suppressed complexes from the submerged into the conscious state. For, he maintains, the free, floating anxiety may attach itself to another object and may thus reappear in

consciousness under false associations. He opposes the Weir Mitchell rest-cure on the ground that it does more harm than good by permitting patients to brood over their ailments. Another objection is that through the enforced rest in bed the libido is heightened and the patient is likely to indulge in excessive masturbation. Except for the chlorotic, who must be fed and put to bed, he condemns the entire procedure as worthless. Further, he ridicules Dubois' philosophy and his fear of sexual subjects; on the contrary, he believes in frank talks on any subject by the Freud free association method.

The concluding chapter on treatment and prophylaxis is radical and opposed to conventional teachings. Among other statements we find the following: "The tendency to instruct the young in matters sexual is overdone and may do more harm than good."

One who has not read any of Freud's writings may find this book shocking, but those familiar with Freud's theories may acclaim this as a rather conservative contribution to Freudian literature. There is much food for reflection in this interesting and well-written monograph.

LOCAL ANESTHESIA IN DENTISTRY. With Special Reference to the Mucous and Conductive Methods. A Concise Guide for Dentists, Surgeons and Students. By Prof. Dr. Guido Fischer, Director of the Royal Dental Institute of the University of Marburg. Translated from the Second German Edition by Richard H. Riethmüller, Ph.D. Cloth. Price, $4. Pp. 202, with 105 illustrations. Philadelphia: Lea & Febiger, 1912.

This is a summary of the history, experiment, evolution and results of the different drugs used for the original method of freezing the part to be operated on, including the use of cocain and its substitutes, so universally used at the present time. The author shows that cocain is not a safe agent for local anesthesia, but that novocain and its solution are more to be relied on. Braun has shown that the following principles are necessary for the selection of an anesthetic:

1. The locally anesthetizing effect of the drug must be less toxic than that of cocain.
2. The drug must not cause any tissue lesions.
3. It must be soluble in water, and its solutions must be sterilizable.
4. It must permit combination with suprarenal preparations.

The author thinks that "novocain fulfils all of these requirements." He then enters into the discussion of the chemical composition, action and effect of the different preparations of novocain and the method of application.

The second part is taken up with the discussion of the indication for local anesthesia and the dangers of infection.

The technic is elaborately and minutely discussed in part three. The nerve-supply of the face, jaws and teeth are beautifully illustrated in reference to the points of application of the anesthetic to obtain the desired results. For minor surgical operations on the body, the author believes that this method of local anesthesia is becoming more general daily.

FOURTH SCIENTIFIC REPORT ON THE INVESTIGATIONS OF THE IMPERIAL CANCER RESEARCH FUND. Under the direction of the Royal College of Physicians of London and the Royal College of Surgeons of England. By E. F. Bashford, General Superintendent of Research and Director of the Laboratory. Paper. Pp. 233. London: Taylor and Francis, Red Lion Court, Fleet Street, E. C., 1911.

The research which has been conducted during the past eight or nine years under the auspices of the above fund has tended toward specialization on study of the cancer in mice, although systematic statistical studies on the geographic and ethnologic distribution of the disease have also been made. In this volume of the reports, besides a discussion of the present status of the work under the fund, and its bearing on the cancer problem, there are published but three papers: "Spontaneous Tumors in Mice;" "Cancerous Ancestry and the Incidence of Cancer in Mice," and "The Behavior of Tumor-Cells during Propagation." Haaland's article concerns a study of 353 spontaneous primary tumors observed in mice, of which but twenty-five arose certainly outside the mammary gland (not including thirty lung adenomata and twenty-one cases of lymphatous tumors, the exact nature of these two groups being at present somewhat doubtful). Especial attention is given to the tumors arising from other than mammary tissue, it being noteworthy that in all there were but six tumors in males. The finding in mice of such special tumors as hypernephroma, fibromyoma, melanoma, squamous-celled carcinoma and osteosarcoma, attest to the essential identity of tumor formation in mice and men; but the total absence of cancers of mice in two of their commonest sites in man, the alimentary tract and the uterus, shows a striking difference in distribution which awaits explanation. The unusual tumors are described at length, and with lavish, splendidly reproduced illustrations, of such superior quality both as to beauty and real illustrating value that they and the artist, J. R. Ford, are entitled to special commendation. Haaland finds that in the mammary gland of the female mice there frequently occur areas of nodular hypertrophy, associated often with inflammatory changes, which are sometimes due to the presence of nematode worms, and which may well be at least partly responsible for the frequency of cancer in this organ. Mice with spontaneous tumors seem not to be inoculated more easily with tumors from other mice than do normal animals, but are very easily inoculated with their own tumors, indicating the absence of any general constitutional changes which favor growth of cancer other than the specific one which has already been developed.

Murray, in a concise paper, presents evidence that the offspring of mice whose mothers and grandmothers had mammary cancers are considerably more likely (18.2 as against 8.6 per cent.) to develop spontaneous cancers than are mice whose immediate ancestors did not have cancer, although they do not develop the cancers any earlier in life than the latter class.

The general results of this work "harmonize with the conclusion drawn from other lines of work that cancer always arises *de novo* in the organism attacked by a transformation of the ordinary tissue-elements, and lend no support to the view that groups of cells, isolated anatomically and physiologically from the rest of the organism from an early period, form the structural basis of the development of malignant new growths."

Bashford applies the results of extensive transplantation of mouse cancer to a consideration of various fundamental problems of cancer growth and theories of etiology, Ehrlich's athreptic theory of growth coming in for particular consideration and discredit.

All in all, this report indicates substantial, well-coordinated and thoroughly scientific study of the problems of cancer; it is the sort of work that increases the sum of knowledge and furnishes a progressing base from which to start organized and definite incursions into unknown territory, which have much better chance of success than have wild but spectacular dashes into the field, without plan or system.

DER INFANTILISMUS, DIE ASTHENIE UND DEREN BEZIEHUNGEN ZUM NERVENSYSTEM. Von Dr. Paul Mathes, Privatdozenten für Geburtshülfe und Gynäkologie an der Universität in Graz. Paper. Price, 6 marks. Pp. 188, with 8 illustrations. Berlin: S. Karger, 1912.

In this study the author puts together infantilism, asthenia and sundry anomalies of the nervous system and peculiar character make-up, and sees a relation between them all. Since he is a gynecologist by profession, it will be readily understood why the mechanics of the abdominal organs at rest and in motion occupy such a large space in his book (about 77 out of 188 pages). The author is inclined to the view that most of the symptoms in women which express themselves in gynecologic and other ailments are a result of a peculiar unfinished state, so-called infantilism with accompanying asthenia. Interesting, though not convincing, is his statement with reference to women's tendencies to emancipation and craving for political suffrage. He sees in all this nothing but an evidence of their infantilism and an inherent constitutional inferiority with reference to sexual characteristics. Though many will disagree with some of Mathes' views, yet one cannot help agreeing with him that our most cherished opinions are often the result of our peculiar anatomy.

TASCHENBUCH DER SPEZIELLEN BAKTERIOSEROLOGISCHEN DIAGNOSTIK. Von Dr. Georg Kühnemann, Oberstabsarzt a. D., Prakt. Arzt in Berlin-Zehlendorf. Cloth. Price, 2.80 marks. Pp. 132. Berlin: Julius Springer, 1912.

This handbook does not purport to be a treatise on bacteriology or to contain directions for all kinds of procedures such as would be useful for specialized bacteriology or research. Non-pathogenic organisms are omitted and attention limited to pathogenic bacteria, protozoa and fungi. The morphology, biology, cultural characteristics, pathogenicity and methods for cultivating are given in concise and systematic manner. Attention is given especially to the characteristics which aid in diagnosis of disease. Staining characteristics and points of differentiation between similar organisms are given in full. Complete descriptions are given of serum diagnostic tests such as the Wassermann reaction, agglutination tests, etc. From the abundant literature on bacteriology the author has condensed the important facts concerning the different groups of pathogenic organisms and has selected what he considers to be the most valuable general laboratory methods, to the exclusion of such methods and details as are of limited application. A work in English covering the same ground, or a translation of this work would meet with a hearty welcome from busy English-speaking physicians.

A SURGICAL TREATMENT OF LOCOMOTOR ATAXIA. By L. N. Denslow, M.D. Cloth. Price, 3 shillings, 6 pence. Pp. 118. London: Ballière, Tindall & Cox, 1912.

This book advances the view that locomotor ataxia is a disease of the cord, often with a syphilitic basis, but with, in every case of this disease in a male subject, "an abnormal condition of the urethra." "By treatment directed to this condition many of the symptoms of the disease, e. g., the pains, ataxia, visceral crises, *sensation profonde*, hyperesthesias, anesthesias and incontinence of urine and feces, may be cured or alleviated, and the disease itself at least held in check" (p. 1). These remarkable claims are supported by several histories of supposed cures. The book, as we view it, seems to be a thinly concealed advertisement for the author. To the layman it would offer hope of relief from a supposedly serious or incurable affliction. The informed physician can, we trust, see that beneath the smattering of scientific verbiage which is largely quoted from foreign sources, there is little or nothing of merit. Even assuming that the purpose for which the book was written was a laudable one, and the statements as to cases are true, there is nothing about the work commending it to one's reason, scientific judgment or common sense. We are surprised that the publishers ever consented to put it forth with their name on it.

UEBER NERVÖSE ENTARTUNG. Von Professor Dr. Med. Ostwald-Bumke, I. Assistenten an der Psychiatrischen und Nervenklinik der Universität zu Freiburg I. B. Paper. Price, 5.60 marks. Pp. 120. Berlin: Julius Springer, 1912.

This dispassionate dissertation on the degeneracy of our times, especially with reference to the increase and the transmission of nervous and mental diseases, is a worthy contribution. Bumke does not believe in the view that acquired disease is ever transmitted to future generations. His conclusions lead him to adopt the opinion of those who see in our social and economic conditions the sole cause for the slight increase in nervousness. This book might become an "eye-opener" to those of our pessimistic philosophers who constantly prattle about the degeneracy of our times, forgetting all the while that in every age and clime there have been individuals who could not "see straight."

SUGGESTION AND PSYCHOTHERAPY. By George W. Jacoby, M.D., Consulting Neurologist to the Hospital for Nervous Diseases, New York. Cloth. Price, $1.50 net. Pp. 355, with illustrations. New York: Charles Scribner's Sons, 1912.

This book is written for the educated layman on a subject requiring clarifying statement. The book-market has already become flooded with pseudoscientific literature on psychotherapy, but what is needed most of all is the honest expression of leading medical men. No doubt this modest little volume will find a useful place on the shelves of the intelligent man's library.

Medicolegal

Liability of County for Services Rendered on Request of Attending Physician or of Mayor of City

(Dykes vs. Board of Commissioners of Stafford County (Kan.). 121 Pac. R. 1112)

The Supreme Court of Kansas had here an action brought by a physician to recover for services rendered in different cases. In one, it appeared that the physician attending on a family, several members of which were sick, believing the malady to be diphtheria, the health officer believing otherwise, called in consultation the plaintiff (the health officer being invited but failing to attend), who diagnosed the cases, and found the patients suffering from diphtheria. The plaintiff quarantined the family, administered antitoxin, and gave general instructions for the treatment and isolation of the cases and of the family and for the protection of the public against the spread of the disease. The county had a poor farm, but one with no facilities or conveniences for isolating or quarantining persons suffering from cantagious or infectious diseases. He presented his bill for $15, alleged to be a reasonable compensation, to the county board, which refused to pay it. It is held that, as the pleading showed that the services were performed on the request of the attending physician who had no authority to bind the county, and failed to show refusal or inability on the part of the afflicted family to pay, a cause of action was not stated. The court, however, says that the plaintiff, not being a volunteer, but answering the call of the attending physician, acted properly, and, in so far at least as his services tended to the protection of the public from the spread of what was thus determined to be diphtheria, a moral obligation existed for his reasonable compensation, though, because it was not alleged that the family were unable or unwilling to pay for his services, and, not being called into the case by any one having authority to bind the county, it could not be said the trial court erred in sustaining a demurrer to this cause of action, the county board having seen fit to refuse payment.

Other causes of action being based on alleged authority from the mayor or acting mayor, it is held that a county having a poor farm with no facilities or conveniences for operating on or caring for persons without friends or money, suffering from catalepsy, appendicitis, or broken collar bone, is liable for the reasonable value of services and treatment afforded such persons, not inhabitants, on the order of the mayor or acting mayor of a city of the third class within such county. Under section 5561 of the general statutes of Kansas of 1909, the mayor or acting mayor of a city of the third class is deemed to be an overseer of the poor with power in cases of emergency to bind the county by granting or ordering such temporary relief for a person, not an inhabitant, lying sick, or in distress without friends or money, as the nature of the case may require; the intention of the legislature and the duty of the county being to succor such afflicted sojourner, rather than to delay action for the observance of formalities. The legislature in making provision for aiding afflicted sojourners knew as all practical persons know that in cases of emergency celerity rather than formality of action is essential, else, while adjusting and applying the ordinary red tape, the death of the patient may end the need of human succor.

Attending Physician Testifying to Results of Autopsy

(Thomas vs. Byron Township (Mich.), 134 N. W. R. 1021)

The Supreme Court of Michigan holds that, where neither the deceased nor the representative of her estate had waived the statutory privilege, it was error to permit the physician who attended her from the time of her injury until her death to testify, in an action brought by the administrator of her estate to recover damages for her injury, to the results of an autopsy and his conclusions therefrom as to the cause of her

death. The question so decided the court says was one of first impression before it, and one on which the authorities gave no great assistance, no case being cited by counsel, and the court being unable to find any, where the exact question presented has been passed on.

There was no dispute but that the relation of physician and patient existed during the lifetime of the plaintiff's decedent, or that all communications and knowledge which are inhibition of the Michigan statute received by this physician during her lifetime were privileged and so continued, there having been no waiver; but it was claimed that the death of the patient made this testimony competent. From the examination of the witness the court concludes, by the questions asked, the answers to which were excluded as privileged, that he had during the lifetime of the patient made such an examination of her person, and received such information, as was necessary to diagnose her case and prescribe for her, and also that he had disclosed to the defendant's attorney such facts. The court must also conclude from the record that on account of this relation, which existed between the witness and the deceased, it was possible for him to proceed within a few hours after her death to hold an autopsy.

The statute involved has been in force, in Michigan, without amendment, since the Revision of 1846. Its provisions are therefore a part of the fixed policy of the state. This court has given it a liberal construction in protecting the privilege of the patient created by it. To allow the testimony of this attending physician as to this autopsy and his conclusions therefrom would operate to take away such privilege clearly granted. This testimony was improperly given in the case. Any other construction and determination is not in harmony with this court's construction of this statute and cannot be entertained. It was error to admit it.

The court also holds that it amounted to prejudicial error for counsel for the defendant to repeatedly ask the witness similar improper questions, apparently to get before the jury incompetent testimony, after an objection had been sustained to a question asking him to state what he determined from his visiting the patient and diagnosing her case was the matter with her. This court has repeatedly held that such conduct will not be tolerated.

Attendance on Indigent Persons for Which Compensation May Be Had—Action of Board of Supervisors Not Final

(Chapman vs. Board of Supervisors of Muskegon County (Mich.), 134 N. W. R. 1025)

The Supreme Court of Michigan says that the plaintiff, a physician, rendered professional services to one Bessie Peterson, an alleged indigent person, starting to attend her some time before he claimed to have been directed to care for her by the supervisor of the township, and continuing to attend her until October 4, 1903, when he removed to Chicago, having arranged with another physician to take care of her for him. She was afflicted with tuberculosis of the bowels.

The claim that it was not shown that Bessie Peterson was an indigent person might be disposed of by noting that the health board of the township by resolution determined that at the time the services were rendered Bessie's father was not financially able to pay for them. Moreover, this court has held that in case of a legal employment the pecuniary ability of the patient is not controlling. Nor could it be said that there was no evidence of a legal contract.

It was contended that the board of supervisors having disallowed the plaintiff's claim, its decision was final. But the circuit court had jurisdiction to entertain an appeal. The services for which compensation was sought were all rendered before the adoption of the constitution of 1908. Section 9 of Article 8 provides: "Appeals may be taken from such decisions of the board of supervisors, or auditors, to the circuit court in such manner as shall be prescribed by law." Section 2 of Act No. 58, Public Acts of 1909, provides that: "When the claim of any person, firm or corporation shall be disallowed in whole or in part by the board of supervisors or board of county auditors, such person, firm or corporation may appeal from the decision of such board to the circuit court for the same county." The language of this act is very broad. No intimation is there given that appeals will lie only in those cases in which the claim arose subsequently to the passage of the act. The right given apparently covers every case of total or partial disallowance. It is clear that this statute confers no new rights, or creates no new liability. It affects the remedy only for a pre-existing right, and as such may be invoked in the enforcement of that right.

But while it has been held that this statute should receive a liberal construction in the interest of the public health, this court thinks that it would be going too far to hold that a physician having a contract of employment with a health board might hire another physician to do the actual work, and himself collect for the service. It may well be supposed that the element of personal fitness enters into the contract. The board certainly is clothed with the power of selection, and the county should not be called upon to pay for the services of a physician with whom no contract was made. It seems equally plain that that portion of the bill represented by charges made by the plaintiff for services rendered by himself prior to the making of the contract was properly disallowed. However, the plaintiff was entitled to compensation for medicines furnished by him, under his contract, even though they were administered by the hand of another.

Physician Looking to Recovery of Judgment for Fee as Witness

(Lack Malleable Iron Co. vs. Graham (Ky.), 143 S. W. R. 1016)

The Court of Appeals of Kentucky says that it cannot agree with the contention that the testimony of a physician as a witness for the plaintiff in a personal injury case must be disregarded when it is shown that he is looking to the recovery of a judgment in the case for his fee. In the first place, it would be a serious and unwarranted reflection on the integrity of a physician to say as a matter of law that his testimony was warped or influenced by the fact that, unless a recovery was had, he would not be paid for his services in examining or treating the patient. In the second place, if such a rule obtained, it would have a tendency to deprive those in need of the services of skilled physicians of such services, or at least put them to the necessity of paying for such services as had been rendered before the physician could testify. It is, however, competent, when a physician has testified as to the character, nature and extent of an injury, to ask him the amount of his bill and whether or not it has been paid, for the purpose of showing bias and affecting his credibility on this point. But when a jury, with these facts before it, has returned a verdict in favor of the plaintiff, evidently based, at least in part, on the opinion of such physician, the court would not be warranted in disregarding the evidence and setting aside the verdict.

Society Proceedings

COMING MEETINGS

Am. Acad. of Ophthal. and Oto-Laryngol., Niagara Falls, Aug. 20 22.
Amer. Assn. of Obstetricians and Gynecologists, Toledo, Sept. 17-19.
American Electro-Therapeutic Association, Richmond, Va., Sept. 3-5.
American Public Health Association, Washington, D. C., Sept. 18-20.
American Roentgen Ray Society, Niagara Falls, Sept. 11-14.
Colorado State Medical Society, Pueblo, Sept. 24-26.
Conf. State Bds. of Health of N. Am., Washington, D. C., Sept. 20-21.
Indiana State Medical Association, Indianapolis, Sept. 26-27.
Internat. Congress on Hygiene, etc., Washington, D. C., Sept. 23-28.
Medical Society of the Missouri Valley, Council Bluffs, Ia., Sept. 5-6.
Nevada State Medical Association, Reno, Sept. 10-12.
New Mexico Medical Society, Roswell, Sept. 12-14.
Pennsylvania State Medical Society, Scranton, Sept. 23-26.
Wyoming State Medical Society, Sheridan, Sept. 17.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Surgery, Gynecology and Obstetrics, Chicago

July, XV, No. 1, pp. 1-133

1 *Mesenteric Chyle Cysts. E. Friend, Chicago.
2 Pathogenesis, Anatomy and Cure of Prolapse of Rectum. A. V. Moschocowitz, New York.
3 *Gastroenteroptosis. J. Ransohoff, Cincinnati.
4 End Results in Gall-Bladder Surgery. B. B. Davis, Omaha, Neb.
5 Infection of Retroperitoneal Lymphatics. J. E. Moore, Minneapolis, Minn.
6 Present Status of Abdominal Cesarean Section: When and How Should Operation be Performed? R. Peterson, Ann Arbor, Mich.
7 Surgery of Cervix Uteri. H. P. Newman, San Diego, Cal.
8 *Chronic Infective Tenosynovitis. W. W. Grant, Denver.
9 Some End-Results of Intestinal Stasis in Children. L. E. Barrington-Ward, London.
10 Bilateral Resection of Jaw for Prognathism. W. M. Harsha, Chicago.
11 Bilateral Resection of Mandible Posterior to Second Molars, for Correction of Prognathism. J. Eisenstaedt, Chicago.
12 Renal Varix. P. M. Pilcher, Brooklyn.
13 Hernias of Ovary, of Fallopian Tube and of Ovary and Fallopian Tube. A. P. Heineck, Chicago.
14 Simplified Technic for End-To-End Intestinal Anastomosis With Report of Twenty-Eight Cases. A. L. Soresi, New York.
15 *Unusual Bone Tumor of Foot. E. H. Beckman, Rochester, Minn.
16 *Tincture of Iodin in Preparation for Labor Cases. M. Watkins, Natchez, Miss.
17 Litholapaxy as Office Operation in Selected Cases. H. A. Fowler, Washington, D. C.
18 Some Phases in Surgical Treatment of Gastric Ulcer. W. D. Haines, Cincinnati.

1. **Mesenteric Chyle Cysts.**—Friend has collected fifty-two true chyle cysts of the mesentery, dating from 1875 to 1912, although the disease was first described by Rokitansky in 1842. From this series he has found that they occur at all ages from early childhood to very late in life. In size they varied from ¾-inch in diameter to an adult head. The great majority presented themselves in the umbilical region or between the umbilicus and the pubes. Among twenty-five patients treated by incision and drainage there were twenty-three recoveries and two deaths, and among eighteen patients treated by extirpation there were twelve recoveries and six deaths. One patient in whom an artificial anus was established died. Friend cites one personal case.

3. **Gastroenteroptosis.**—Every case of gastroenteroptosis, Ransohoff says, should be studied individually and should not be treated in a routine way, whether by medicine or operation. If after the removal of a normal or nearly normal appendix the patient continues to suffer he should not be lightly classed among the hopeless neurotics. Rather is it the duty of the surgeon to see whether he has not overlooked some visceral displacement or torsion, which is the cause of the suffering. A small incision in abdominal work has some disadvantages. The conclusion of the internists based on laboratory findings, as for example, after ingestion of a test meal, cannot be made the basis of the functional capacity of the stomach under every-day conditions. In many seemingly hopeless cases of gastroenteroptosis with marked neurasthenic symptoms, operation promises relief. If this is the result of suggestion, it is none the less valuable if the relief is permanent. Whereas, of course, internal treatment, abdominal supports and postural treatment should be tried, operative interference should not be unnecessarily delayed, lest the habitus nervosus becomes too deep-rooted to be eradicated. No gastroptotic patient should be operated on unless some actual functional disturbance can be demonstrated. To relieve this must be the aim of the operation. Given a gastroptosis in which we can demonstrate distinct functional incompetence or deviations, the existence of nervous phenomena does not militate against operation, but may be the chief reason for performing it.

8. **Chronic Infective Tenosynovitis.**—In the case cited by Grant all the most important flexor muscles of the hand, the flexor carpi ulnaris, the flexor carpi radialis, the flexor sublimis, profundus digitorum and flexor longus pollicis, were involved. Five and a half years before Grant saw the patient the fingers of the left hand were affected, though not severely, with what was called rheumatism. This condition gradually extended, in the course of a year, to the front of the wrist and forearm. Although mild, the disease was progressive, extending slowly to the palm and up the arm, at times remaining stationary. It continued in this way with slight pain, at times, and swelling, gradually increasing until January, 1911, when the pain, swelling and fever increased rapidly, completely disabling the hand and arm in the course of a few weeks. The hand was absolutely helpless, with some anesthesia, due doubtless to pressure. His fingers were in a state of partial flexion and he was unable to flex or extend them in the slightest degree. Examination showed the palmar surface of the hand and arm greatly swollen, the fingers (except the thumb) not seriously involved in the swelling, and the constriction of the annular ligament making a sharp line of distinction in the appearance of the hand and arm. Pressure and manipulation revealed a soft, doughy feeling and deep fluctuation from the arm to the palm and thumb. The extensor muscles were not involved in the slightest. A central incision was made through the skin and deep fascia from the upper third of the arm to the middle of the palm and a connecting incision to the distal phalanx of the thumb, following the course of the flexor longus pollicis, which was infected and enormously distended throughout its entire extent. There were no adhesions between fascia and tendons, but the latter were adherent *en masse* and the veins greatly engorged. The annular ligament was divided, the tendons treated separately, the thickened, distended sheath of each split throughout its length and trimmed with scissors. Each sheath was distended with a thick, grumous, odorless material resembling yellow cornmeal gruel. In the belly of the sublimis digitorum there was a circumscribed cyst containing about a tablespoonful of this material, the capsule or membrane being almost as rigid and thick as cartilage. No rice bodies peculiar to tuberculosis were found. There was a similar mass in the palm, with thin capsule, not in direct communication with a tendon. Some tendons were softened by a degenerating process. At the present time the wrist motion is almost normal, though it still creaks a little on extreme flexion. The patient has a very useful hand.

15. **Bone Tumor of Foot.**—This case is reported by Beckman because of the unusual circumstance of finding a bony tumor lying in the hollow of the left foot which was not attached at any point to the bones of the foot. The patient's health remained good. He had never suffered any pain or inconvenience from the tumor except a slight tenderness when walking and the inconvenience of having the entire plantar arch filled up by the mass. He had not stopped work. The skin over the tumor was apparently normal, had never been reddened or sensitive, and the blood vessels were not dilated. The entire mass felt smooth and firm. The motion at the ankle joint was not interfered with. At the operation the growth was then seen to be irregularly nodular with many wart-like projections which had pushed through the fascia. On account of the size of the tumor, it could not be exposed and it was split through the center with a chisel and half of it removed. After obtaining more room in this way, the other half of the tumor was enucleated intact and was found to rest on the deep tendons of the foot, but no bare bone was exposed at any point. The tumor consisted of bone and cartilage covered with a thick fibrous capsule, which, on microscopic examination, showed no periosteum. The tumor weighed 160 grams, was irregularly oval, and measured 12x7x5 cm. Microscopically, the structure of this tumor is cancellated bone containing several areas of cartilage. It does not differ from the structure of many other new osseous growths developing from bone.

16. **Iodin in Preparation for Labor Cases.**—Watkins' usual routine, when called to a case late, is simply to wash the hands in soap and water, put on gloves to sterilize, clip long hair with scissors, thoroughly apply tincture of iodin to the field, separate the labia, sponge out with bichlorid solution, wash up, put on gloves and he is then ready for examination, and his results are gratifying. In special hurry cases, he lets his trained nurse apply iodin while he washes up. This method is applicable to abortions and curettage as well.

Pennsylvania Medical Journal, Athens

July, XV, No. 10, pp. 761-842

19 Anomalies of Refraction and Their Relation to Abnormalities of Ocular Balance. S. D. Risley, Philadelphia.
20 Refraction and Use of Cycloplegics With Especial Mention of Hyoscin. C. M. Harris, Johnstown.
21 Recurrent Third-Nerve Paralysis With Report of Case. J. F. Klinedinst, York.
22 Prescribing of Glasses by Family Physician. J. Thorington, Philadelphia.
23 Asexualization of Unfit. M. W. Barr, Elwyn.
24 Social Evil from Rational Viewpoint. H. M. Christian, Philadelphia.
25 Prophylaxis of Venereal Diseases. T. Diller, Pittsburgh.
26 Idem. J. W. Luther, Palmerton.
27 *Idem. E. Martin, Philadelphia.
28 Cataract Operations, Comparison of Technic of Dr. Herman Knapp of New York and of Colonel Smith of Punjab, India. J. E. Willetts, Pittsburgh.
29 Need Business Qualities Interfere With Successful Practice of Medicine? C. J. Cummings, Williamsport.
30 Arteriosclerosis. F. A. Rupp, Lewistown.
31 Nitrous-Oxid and Oxygen Anesthesia. R. T. Wall, Scranton.
32 *Increasing Factors of Safety in Surgical Operations. J. M. Wainwright, Scranton.
33 Diphtheria. A. L. Kotz, Easton.

27 and 32. Abstracted in THE JOURNAL, November 4, pp. 1559 and 1560.

American Journal of the Medical Sciences, Philadelphia

July, CXLIV, No. 1, pp. 1-156

34 Constipation. D. Rochester, Buffalo.
35 Drug Treatment of Edema. J. L. Miller, Chicago.
36 Non-Surgical Treatment of Exophthalmic Goiter. S. S. Cohen, Philadelphia.
37 *Infections Following Tonsillotomy with a Consideration of the Forms of Such Infections. H. Koplik, New York.
38 Anatomy and Relations of the Tonsil in the Hardened Body. G. Fetterolf, Philadelphia.
39 *Chvostek's Sign and Its Significance in Older Children. M. H. Bass, New York.
40 Verrucae Plantares. R. L. Sutton, Kansas City, Mo.
41 Therapeutic Application of P-Hydroxyphenylethylamin: An Active Principle of Ergot. D. M. Hoyt, Philadelphia.
42. Occurrence of Trichomonas Hominis in Gastric Contents With a Report of Two Cases. F. Smithies, Ann Arbor, Mich.
43 Sacro-Iliac Displacement. J. K. Young, Philadelphia.
44 *Hemolysis in Vivo and in Vitro as Diagnostic of Cancer. L. W. Gorham and H. Lisser, Baltimore.

37. Infections Following Tonsillotomy With a Consideration of the Forms of Such Infections.—In this paper Koplik calls attention to three distinct forms of sepsis which followed on surgical removal of the tonsils: 1. The form which runs an obscure fever for a week or more without causing any endocarditic or other lesions. 2. Those cases which run a temperature and combine with them the manifestations either of a mild infectious endocarditis, or in which, as in the case of chorea, the endocarditis takes on a severe infectious (or, as it is called, malignant) type, with subsequent fatal issue. 3. A third form of sepsis is that in which the infection is evidently severely hematogenous and causes destructive blood changes, with signs of sepsis such as profuse hemorrhagic ecchymotic areas on the surface of the skin, petechiæ, severe hemorrhages from the bowel, and areas of bronchopneumonia.

39. Chvostek's Sign and Its Significance in Older Children.—In all 495 children, ranging in ages up to 14 years, were examined by Bass as to the presence of this sign. It was positive in sixteen of these cases, that is, 3.2 per cent. It will be noted that the sign was present only in 1 per cent. of the children under 3 years, and then became gradually more frequent until it reached 19.6 per cent., in children aged 10 to 14 years. These figures agree fairly well with those found by German observers. Analyzing his series of cases to see how far the positive Chvostek means tetany, Bass concludes that there seems to be no case among these sixteen (nor among fifteen described later) in which a positive diagnosis of tetany, present or previous, could be made. In only two of the cases could a history of convulsions be obtained. In the one case a girl, aged 15 years, had had a number of general convulsions when aged 8 or 9 years, but since then she has had no more. Although she had a marked Chvostek's sign, her electrical reaction to galvanism was normal. Her brother also had never been sick, except for his present complaints of nervousness and headache. Both the children showed orthostatic albuminuria. The second case giving a previous history of convulsions was a boy, aged 6 years, who for a year had been subject to peculiar attacks, resembling Jacksonian epilepsy. Chvostek's sign in his case was also well marked but his electrical reactions were normal, and the diagnosis of late tetany (tetanoid spatek-lampsie of Thiemich) was therefore ruled out. He showed signs of hysteria, such as temporary deafness, irregular and varying areas of anesthesia, and analgesia, and was therefore classed as a case of hysteria. An interesting observation was made in this case as regards the variability of Chvostek's sign. The child was seen one afternoon and showed a very strongly marked facial phenomenon. A few days later he had convulsions followed by several hours of coma. Excepting in these two cases of convulsions no history of any symptoms of tetany, such as laryngismus or carpopedal spasm, could be obtained in any of the cases. In a few children electrical irritability was tested, but no case showed galvanic hyperirritability. These cases showing the positive sign in a way resemble each other; they fall into a well-defined group. The most striking feature is the large number (thirteen) of cases of orthostatic albuminuria. Most of these, as well as two cases classed as headache and five classed as neurotic, the asthmatic, the case of enuresis and cyclic vomiting, belong to the same clinical group, children showing the "vasomotor symptom complex." The preponderance (twenty-three out of thirty-one cases) of this type of child fits in well with the conclusions of Hochsinger, and emphasizes the frequency of the presence of Chvostek's sign in nervous children. In these cases this sign seems of much more value than the knee-jerk, and its presence in neurotic children appears to be of much more constancy than an increased patellar reflex. Of the thirty-one children six did not show any other signs of nervousness, five having bronchitis and one mitral disease. These six, however, were seen only once or twice. The other twenty-five all showed distinct neuropathic symptoms, twenty of them belonging to the vasomotor group.

44. Hemolysis in Vivo and in Vitro as Diagnostic of Cancer.—This work was undertaken for the purpose of comparing the skin reaction for carcinoma described by Elsberg, Neuhof, and Geist, with the hemolytic power *in vitro* of the serum of cancer patients, and to study the relation if any, existing between these phenomena and the normal isohemolysins and isoagglutinins. As the result of their studies the authors reach the conclusion that the test is certainly not specific for carcinoma. They found it positive in somewhat more than half of patients suffering from cancer (60 per cent.), and negative in a large majority of patients showing other forms of disease (about 89 per cent.). It may prove to be another help in the diagnosis of cancer, and its value is sufficient to warrant the application of the test and study in a large series of cases. Apparently no connection exists between a positive skin reaction and hemolysis in the test-tube. The test-tube method is of questionable value. The grouping to which the corpuscles employed for injection belong is not a matter of indifference but one of considerable importance. The authors are not prepared to speak as to the special value of the reaction in differentiating early carcinoma and borderline tumors, or as to its absence in advanced cases. A positive reaction is of much greater significance than a negative one. If the reaction is positive, the patient very probably suffers from cancer; if, however, it be negative, cancer cannot be excluded.

Journal-Lancet, Minneapolis

July 1, XXXII, No. 13, pp. 337-362

45 Surgical Treatment of Diverticula of Urinary Bladder. W. Lerche, St. Paul, Minn.
46 Spondylitis Deformans, With Report of Cases. C. A. Reed, Minneapolis.
47 Abdominal Contusions, With Report of Cases. C. J. Holman, Mankato, Minn.
48 Chronic Cholecystitis and Associated Affections. S. B. Haessly, Red Wing, Minn.

July 15, XXXII, No. 14, pp. 367-394

49 Roentgen-Ray in Diagnosis of Fractures. W. S. Fullerton, St. Paul, Minn.
50 Fracture of Elbow. O. W. Parker, Ely, Minn.
51 Fracture of Wrist. A. E. Wilcox, Minneapolis.
52 Fracture of Patella. W. E. Harwood, Eveleth, Minn.
53 Compound Fractures. B. S. Adams, Hibbing, Minn.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

July, III, No. 6, pp. 609-667

54 *Action of Caffein on Mammalian Heart. J. D. Pilcher, Cleveland.

55 Action of Glandular Extracts on Amount of Epinephrin in Blood. I. Ott and J. C. Scott, Philadelphia.
56 *Action of Sodium Citrate on Mammalia, With Special Reference to Acquired Tolerance and To Its Action on Cerebellum. T. B. Robertson and T. C. Burnett, Berkeley, Cal.
57 *Action of Salts of Cholin on Arterial Blood-Pressure. L. B. Mendel, F. P. Underhill and R. R. Renshaw, Middletown, Conn.

54. **Action of Caffein on Mammalian Heart.**—Pilcher summarizes his findings as follows: 1. During the acute fall in blood-pressure, subsequent to a rapid intravenous injection of caffein. (a) Within a total quantity of caffein 10 mg. per kilogram the cardiac volume ("tone") and the amplitude of the excursion is usually unchanged. (b) With larger quantities, the volume progressively increases (or the "tone" decreases) and the amplitude of the excursion decreases. 2. Permanent changes. (a). Within a total quantity of caffein 20 mg. per kilogram, there is a moderate rise in blood-pressure, an increased heart-rate, a decrease in heart volume (or an increase in "tone"); there may or may not be an increase in the amplitude of the excursion. (b) With larger doses, the blood-pressure progressively falls, the heart-rate increases, the volume increases (or the "tone" is lessened), the amplitude of the excursions decreases.

56. **Action of Sodium Citrate on Mammalia.**—As a result of administering repeated and gradually increasing doses of sodium citrate, the authors found that rabbits acquire such a pronounced degree of tolerance for the drug that a dose (15 c.c. M/1) which normally causes extremely severe symptoms of intoxication, or even death, causes either very slight symptoms or else no symptoms of intoxication at all. This tolerance they regarded as consisting, essentially, in tolerance to deprivation of tissue-calcium. Two alternative explanations of this phenomenon are suggested, namely: (a) The sensitiveness of tissues to lack of calcium is partly a phenomenon of "*Unterschiedsempfindlichkeit.*" Just as an organism can accustom itself to several different "nitrogen levels" and maintain nitrogen equilibrium at different periods with very different nitrogen outputs, so we may imagine that the tissues affected by sodium citrate can function at various "calcium levels" provided the transition from a higher level to a lower is sufficiently gradual. (b) Tolerant animals are able to draw on reserves of calcium which are ordinarily not available. The cortex of the cerebellum, in rabbits, is not affected by the direct application of sodium citrate to its surface, while the application of sodium citrate to the underlying white matter elicits a profound reaction. With exceptions noted, the symptoms of acute citrate-intoxication in rabbits, following the subcutaneous administration of large doses, are attributable to direct cerebellar excitation by the citrate, inasmuch as they may be elicited by the direct application of minute doses to the white matter of the cerebellum. Of the various parts of the central nervous system the cerebellum is the one which is most sensitive to the excitant action of deprivation of calcium.

57. **Cholin and Blood-Pressure.**—The authors' experiments, along with numerous further records, afford, they believe, added evidence that the views promulgated by Popielski and his pupils about the physiologic behavior of salts of cholin are not tenable. Even with exceptionally pure synthetic salts they have never failed to observe the characteristic transitory fall of arterial pressure, a fall not profound or prolonged, but never absent even when fractions of a milligram of purest products are injected. The "contamination" theory is rendered improbable by the fact that cholin salts showed no quantitative differences in the physiologic effect when different specimens of presumably unequal purity were investigated. Furthermore, it seems extremely doubtful if properly prepared and preserved cholin salts readily decompose.

Journal of Oklahoma State Medical Association, Muskogee

July, V, No. 2, pp. 45-80

58 Surgery of Chronic Pelvic Inflammation. R. M. Howard, Oklahoma City.
59 Sympathetic Ophthalmia. E. S. Ferguson, Oklahoma City.
60 Hemorrhoids. I. W. Robertson, Dustin.
61 Private Laboratory as Aid to Physician's Home Study. C. D. Blachly, Norman.
62 Plea for More Liberal Diet in Typhoid. A. H. Bungardt, Cordell.
63 Suppurative Pleurisy. C. W. Heitzman, Muskogee.
64 New Way to Preserve Pathologic Specimens. W. D. Berry, Muskogee.

Journal of Medical Research, Boston

July, XXVI, No. 3, pp. 357-546

65 Antibodies Produced by Various Constituents of Dog's Bile. H. T. Karsner, Boston and R. M. Pearce, Philadelphia.
66 *Comparative Study of Antibodies. J. A. Kolmer, Philadelphia.
67 *Primary Cancer of Lung. A. T. Henrici, Pittsburgh.
68 Atrophy of Pancreas After Occlusion of Pancreatic Duct. L. S. Milne and H. L. Peters, New York.
69 *Glycolytic Power of Blood and Tissues in Normal and Diabetic Conditions. L. S. Milne and H. L. Peters, New York.
70 Contribution to Pathogenesis of B. Abortus, Bang.-II. M. Fabyan, Boston.
71 Bacterium Ozene (Abel): Fermentation Reactions with Eleven Sugars, Differential Diagnosis and Use as Vaccine for Treatment. C. G. Page, Boston.
72 Case of Ovarian Pregnancy. G. S. Graham, Hanover, N. H.
73 Induced Variations in Bacterial Functions: Experimental Study. A. C. Abbott, Philadelphia.
74 *Metaplasia of Bronchial Epithelium. S. R. Haythorn, Pittsburgh.
75 Determination of Cholesterol Content of Human Serum by Colorimetric Metthod. P. G. Weston and G. H. Kent, Warren, Pa.

66. **Comparative Study of Antibodies.**—All of the immune serums which Kolmer has examined contained some body capable of fixing hemolytic complement. But the nature of the complement-binding substances is difficult to understand. Thus diphtheria immune serum certainly contains no lysins or receptors of the third order and yet such serums bind complement with specific antigens quite readily. Not infrequently these tests apparently show the largest amount of antibody present at a time when the patient clinically is gradually developing severer symptoms and signs of syphilis, whereas strictly speaking the largest amount of antibody should be found at the height and decline of the infection. With these considerations combined with the lack of relation between complement fixation and bacteriolysins it would appear to Kolmer that a special body is stimulated and thrown into the blood-stream in the nature of a reacting substance, a "reagin," capable of binding hemolytic complement and not a true antibody in the sense of being prophylactic against or destructive to the antigen.

67. **Cancer of Lung.**—The majority of so-called cancers of the lung, Henrici believes, are in reality of bronchial origin. Squamous-celled cancers of the lung, he says, probably arise in the majority of cases from bronchial epithelium which has undergone a metaplasia. Some of these tumors apparently invade the lung along the alveolar wall, retaining the alveolar septa as stroma.

69. **Glycolytic Power of Blood.**—Normal dog-serum was found by Milne and Peters to have no glycolytic action on glucose. After a large meal or the administration of a large quantity of dextrose or saccharose the serum acquires no glycolytic power. Blood-corpuscles can absorb a comparatively large amount of glucose. Only a small amount of this glucose absorbed by blood-corpuscles can be recovered as dextrose. The blood of depancreatized dogs has a normal or slightly increased power of taking up dextrose and only a small amount of this can be recovered as dextrose. The tissues of depancreatized diabetic dogs can absorb as much as normal, or more, dextrose from a perfusion fluid. Normal dog-serum has a marked diastatic action on glycogen, converting it into glucose. Its strength is not altered after a large meal or administration of large quantities of dextrose, in fasting, or in phloridzin diabetes, but is slightly, often markedly, increased in depancreatized diabetic dogs. In phloridzin diabetes the sugar content of serum is slightly increased, often in sufficient degree to easily account for its elimination in the urine.

74. **Metaplasia of Bronchial Epithelium.**—The evidence concerning metaplasia, as observed by Haythorn in his case, is strongly against the theory of the "direct metaplasia" of Virchow. His findings, in a measure, agree with Schridde's idea in so far as they show that the metaplastic cells are newly formed cells and that they come from the growing layer. They support Ribbert's views in that the new-formed cells are less highly specialized than the normal cells, and also that the surrounding tissue changes have a strong influence on the type of the new cells formed. They seem to contradict the necessity of the presence of embryonic rests, as they could hardly have

been so numerous as simultaneously to set up the process in several different bronchi. Another idea which is brought forward is that the bronchial mucosa, destroyed beyond the hope of specific regeneration, seeks to protect itself with the best reparative cells it can produce in its exhausted state. Assuming that there is a histochemical identity of the so-called basement membrane, Haythorn suggests that there is a link between the injury to these membranes and tumor growth; that is, that the irritants and inflammations which destroy them open the way for metaplasia and new growth.

Journal of Missouri State Medical Association, St. Louis

July, IX, No. 1, pp. 1-42

76 Plea for Separation of State Medical Interests from Politics. R. H. Goodier, Stoutsville.
77 Recognition and Treatment of Early Manifestations of Mental Diseases. C. R. Woodson, St. Joseph.
78 Evolution of American Surgery. C. M. Nicholson, St. Louis.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

July, V, No. 1, pp. 1-26

79 Baltimore's Milk Supply. F. C. Blanck, Baltimore.

Monthly Cyclopedia and Medical Bulletin, Philadelphia

July, XV, No. 7, pp. 385-448

80 Salvarsan in Treatment of Various Clinical Forms of Syphilis, With Report of Twenty New Cases. J. M. Anders, Philadelphia.
81 *Value of Enterostomy in Ileus. L. H. Taylor, Washington, D. C.
82 Visceral Orthopedics. G. O. Jarvis, Philadelphia.
83 *Cholesterin Reaction in Serodiagnosis of Lues. F. S. Matlack, Philadelphia.
84 Genesis of Heart Beat. A. W. Downs, Philadelphia.

81. Abstracted in THE JOURNAL, August 3, p. 397.

83. **Cholesterin Reaction in Serodiagnosis of Lues.**—The cholesterin test is, in theory, very similar to the Wassermann test, an antigen being used, except that the latter is an artificial antigen, and not a natural antigen as in the original Wassermann reaction. The test depends on the flaking or precipitation of sodium glycocholate in the presence of syphilitic sera. But the sodium glycocholate precipitated is generally so insignificant that it could easily be overlooked or shaken up. A substance must be added that will increase the amount of precipitation or will be thrown down with the precipitate of sodium glycocholate without disturbing the reaction by its presence. Cholesterin is used for this purpose. The 200 cases reported by Matlack were from all classes as they were sent in for the Wassermann test, and include the various stages of syphilis, latent syphilis, paresis, and non-syphilitic but suspected cases. In determining the percentage of correct and incorrect results he used the Wassermann test as a standard. In 169 cases the reaction was the same as with the Wassermann test. In thirty-one cases the reaction differed from the Wassermann test. Of the thirty-one tests which resulted differently from the Wassermann test, twenty-three were negative when the Wassermann was positive, while only eight went positive when the Wassermann was negative, showing that in only about 3 per cent. of cases could the test go wrong in denoting syphilis when none was present. Therefore Matlack concludes that the cholesterin test is valuable as a control to the Wassermann test, for when both tests result likewise, either positively or negatively, we do not think it necessary to repeat. If they differ, we repeat the Wassermann test with a watery antigen and abide by the result. The cholesterin test can never be used as a simple test for syphilis in the physician's office, as it demands just as accurate a technic as the Wassermann test, and a large experience in reading the results is required before one becomes expert enough to decide the extremely important question of "Has or has not this patient syphilis?"

West Virginia Medical Journal, Wheeling

July, VII, No. 1, pp. 1-34

85 A Breath. G. W. Swimley, Bunker Hill.
86 Radioscopy in Abdominal Diagnosis. W. A. Quimby, Wheeling.
87 Paroxysmal Pulmonary Edema. J. T. Thornton, Wheeling.
88 Posture in Labor. T. R. Evans, Huntington.
89 Anonymous vs. Personal Journalism. C. A. Wingerter, Wheeling.
90 Lymphatic Leukemia. M. A. Bowers, Hansford.
91 Dyspepsia in Infants. J. H. Hess, Chicago.
92 Fever of Newborn. E. Boise, Grand Rapids, Mich.

Journal of Experimental Medicine, New York

August, XVI, No. 2, pp. 163-287

93 *Vasodilator and Vasoconstrictor Properties of Blood-Serum and Plasma. H. A. Stewart and S. C. Harvey, New York.
94 *Experimental Bronchopneumonia by Intrabronchial Insufflation. M. Wollstein and S. J. Meltzer, New York.
95 Thoracic Duct Lymph After Injection of Oil of Turpentine Into Peritoneal Cavity of Dog. R. I. Dixon, Ann Arbor, Mich.
96 *Changes in Tissue Surrounding Growing Tumor and Significance of Precancerous State. I. Levin, New York.
97 Tumor Inoculation into Organs and Analogy Between Human Cancer and Tumors of White Mice and White Rats. I. Levin, New York.
98 *Pure Cultures of Cells. A. Carrel, New York.
99 Influence of Isoagglutinins on Final Results of Homoplastic Transplantations of Arteries. R. Ingebrigtsen, New York.
100 Studies in Glycosuria: Glycosuria Following Anesthesia Produced by Intravenous Injection of Ether. J. H. King, R. D. Moyle and W. C. Haupt, Baltimore.
101 *Treponema Mucosum (New Species), Mucin-Producing Spirochaeta from Pyorrhea Alveolaris, Grown in Pure Culture. H. Noguchi, New York.
102 *Method for Cultivating Treponema Pallidum in Fluid Media. H. Noguchi, New York.
103 Preventive Action of Diphtheria Antitoxin in Serum-Sensitized Rabbits. P. A. Lewis, Philadelphia.
104 Selective Bactericidal Action of Gentian Violet. J. W. Churchman, Baltimore.
105 Pure Cultivation of Spirochaeta Duttoni, Spirochaeta Kochi, Spirochaeta Obermeieri and Spirochaeta Novye. H. Noguchi.

93. **Properties of Blood-Serum and Plasma.**—The authors found that in plasma there exists a vasodilator substance specific for the vessels of the kidney. This substance is a protein of the albumin class and is precipitated by boiling and by alcohol. It is present also in the serum. It acts directly on the muscle coats of the arteries. The process of clotting of the blood liberates a constrictor substance that acts on the renal vessels and also on the vessels of the limb. This constrictor substance is not a protein; it resists boiling, is soluble in alcohol and acts directly on the muscle coat.

94. **Experimental Bronchopneumonia.**—When intrabronchial insufflation of pure cultures of the streptococcus or of the influenza bacillus was properly carried out by Wollstein and Meltzer it produced without fail a pneumonic lesion. This lesion is similar in its nature to the one known in human pathology as bronchopneumonia, and differs materially from the pneumonic lesion produced experimentally by the intrabronchial insufflation of pure cultures of the pneumococcus. Considering the fact that none of the dogs used in the experiments with the pneumococcus and none of those used by the authors were selected or prepared in any way, the conclusion seems to be unavoidable that the proper invasion of the microorganism is the determining factor in the development of pneumonia, the condition of the animal being only a minor element in this regard. Furthermore, since different organisms introduced in the same way and under conditions which are apparently the same, produced distinctly different pneumonic lesions in animals of the same species, the further conclusion presents itself that the different types of pneumonia are produced by specifically different bacteria. However, the differences in the nature of the lesion may be due rather to the degree of virulence of the causative microorganism than to differences in the species. The condition of the animal and of the affected organ which, in the onset and development of the pneumonic disease, is, perhaps, unimportant, may be the leading factor in determining the course and outcome of the disease.

96. **Changes in Tissue Surrounding Growing Tumor.**—Levin succeeded in producing artificially a true "precancerous state," *i. e.*, an abnormality within an organ of the white rat which favored the subsequent growth of an inoculable cancer. The aim was to determine experimentally whether an abnormality in the tissue surrounding a growing tumor may be created under the influence of the tumor and subsequently to its development. An analysis of the results of Levin's experiments shows that the changes so frequently observed in tissues surrounding a growing tumor may be caused by different conditions. The development and growth of a malignant tumor depends on a local interaction between tumor cells and organ cells. When the cells of a normal organ are capable of inhibiting tumor growth, then an impairment of the normal state of the parenchymatous cells of this particular organ is essential for the growth of the tumor. This "precancerous state" does not consist primarily of an inflammatory change in the adjacent connective tissue, as Ribbert and his followers maintain, but in a degeneration of the parenchymatous cells of the organ.

If, in another instance, the cells of the normal organs are unable to inhibit the proliferation of the tumor cells, then no preparation of the cells of the organ for the tumor is necessary, *i. e.*, no "precancerous state" is needed to enable the tumor to grow. On the other hand, the proliferating tumor cells injure normal cells, either mechanically or chemically, producing a condition that appears on superficial examination like that described as the "precancerous state." In reality, however, this condition is the resultant effect of the tumor growth and may be more correctly designated the "postcancerous state." Of still greater importance is the fact demonstrated in the last series of experiments; namely, that the general condition of resistance or immunity to cancer growth exerts a greater influence on the organism of the animal than any of the local conditions described above. The local resistance of a testicle to tumor growth in a generally susceptible animal may be overcome, but if an animal is made generally immune to the growth of cancer, neither the animal as a whole nor a single organ or tissue in it can be made susceptible to the growth of the tumor.

98. **Pure Cultures of Cells.**—In one experiment Carrel isolated a group of ameboid cells from a culture of cardiac muscle sixty-three days old, and cultivated in plasma. After several passages, they formed a dense tissue from which ameboid cells radiated. The culture was divided into two parts. The part cultivated in plasma alone kept its morphologic characters and continued to produce ameboid cells. The part cultivated on silk in plasma became modified; the cells lost their ameboid characters, and were transformed into large elongated cells which were united in chains, or interlaced to form a network. In a second experiment the round cells taken from a culture of connective tissue seventy-four days old multiplied rapidly. They transformed themselves into elongated cells and produced, after a few passages, a mass of dense connective tissue. From the tissue a large number of elongated cells were constantly growing. In both experiments the tissues originated from the ameboid or round cells extirpated from cultures that were sixty-three and seventy-four days old, respectively. These cultures were still growing actively thirty and forty days later; that is, more than one hundred days after the extirpation of the original fragments from the organism. These experiments show that from old cultures it is possible to isolate and propagate cells that belong to a definite type. A tissue, formed by a pure strain of cells, can be obtained in this way, and this new method may be of value in cytologic investigations.

101. **Treponema Mucosum, Grown in Pure Culture.**—A mucin-producing spirochete has been obtained in pure culture from a case of pyorrhea alveolaris by Noguchi. This organism is an independent species of the genus *Treponema* and, as it is recognized for the first time, he proposes for it the name *Treponema mucosum*. Morphologically the mucosum is difficult to separate from the pallidum and microdentium, but, through its biologic properties and animal reactions it is easily differentiated from all the rest of the spirochetes. The mucosum is not parasitic in the strict sense of the term, but exerts a certain pyogenous action when the tissue has been so injured by foreign substances as to enable it to survive. The strong fetid odor in the discharge from pyorrhea alveolaris is due, at least in part, to the presence of the mucosum in the affected tissue.

102. **Method for Cultivating Treponema Pallidum.**—The principle of Noguchi's method is based on the superposition of a favorable culture medium on a less favorable one. It is not suited to the growth of spirochetes when they are admixed with contaminating bacteria.

Illinois Medical Journal, Springfield

July, XXII, No. 1, pp. 1-138

106 Physician Considered as Economic Factor. W. K. Newcomb. Champaign.
107 *Demonstration of Luetic Reactions. H. Noguchi, New York.
108 *Essential Factors in Development of Surgery. D. P. Allen. Cleveland.
109 Seven Hundred General Anesthesias by Drop Method. S. Dodds, Cairo.
110 Venereal Diseases in Children. C. P. Seippel, Chicago.
111 Obscure Tuberculosis. W. B. Metcalf, Chicago.
107. Published in THE JOURNAL, April 20, p. 1163.
108. Abstracted in THE JOURNAL, June 1, p. 1708.

Laryngoscope, St. Louis

June, XXII, No. 6, pp. 797-916

112 Nature, Cause, Diagnosis and Principles of Surgical Relief. S. J. Kopetzky, New York.
113 Surgical Treatment of Meningitis, Its Scope and Accomplishment. I. S. Haynes, New York.

Boston Medical and Surgical Journal

August 1, CLXVII, No. 5, pp. 145-180

114 Institutions for Prevention and Cure of Tuberculosis as Elements in the Social Defense Against Disease. E. O. Otis, Boston.
115 *Specific Treatment Against Pulmonary Tuberculosis and Its Complications. J. A. Lyon, Rutland, Mass.
116 Some Recurrent Febrile Attacks in Chronic Pulmonary Tuberculosis. C. E. Edson, Denver, Colo.
117 Laboratory Course in Physiology Based on Daphinia and Other Animalcules. G. V. N. Dearborn, Boston.
118 Argument for Large State Insane Hospitals. W. Channing, Brooklyn.
119 *Prognosis in Dementia Præcox. A. W. Stearns, Boston.
120 Gastro-Intestinal Disturbances Observed in Pernicious Anemia. J. Friedenwald, Baltimore.

115. **Treatment of Tuberculosis.**—Inasmuch as mixed infection is usually present in progressive pulmonary tuberculosis and its complications, Lyon says the use of appropriate vaccines is essential, either before the administration of tuberculin or conjointly with the latter. In many catarrhal cases great benefit is derived from polyvalent colon vaccine or, where this fails, an autogenous one made from the *Bacillus coli communis* found in the feces. In the later stages of tuberculosis or in toxemic cases, the purified tuberculin, if given in appropriate dosage and under due precautions, is a useful adjunct to sanatorium treatment. The improvement in the general condition, due to the checking of the intercurrent infection, enables the tuberculin to act favorably on processes which, had the concomitant bacteria been disregarded, would certainly be more refractory, if amenable at all. For some time past specific treatment has been administered by Lyon both against the tuberculous process and the secondary infection, the appropriate bacterial vaccines being given jointly with tuberculin. Very frequently the debilitating complications have been successfully combated by the vaccines, and the relief thus given to the host from the corresponding part of its bacillary load has enabled the tuberculin to cope more effectively with the primary disease. Of the patients thus treated, one hundred have so far been discharged. The one hundred cases were made up as follows: Incipient, eight. Two of these cases complicated; one ischiorectal abscess (cured); one lupus with keratitis (cured). The pulmonary process was apparently cured in three, arrested in two, improved in two and one died. In twenty-nine complicated cases of moderately advanced tuberculosis, the pulmonary process was apparently cured in four, arrested in eleven, improved in seven, unimproved in three and four died. In the forty-four uncomplicated cases of tuberculosis, the pulmonary process was apparently cured in twelve, arrested in eighteen, improved in five, unimproved in seven and two died. In ten complicated advanced cases, the pulmonary process was arrested in two, improved in three, and five died. In nine uncomplicated advanced cases the disease was arrested in one, improved in four, unimproved in three and one died. As to sputum, tubercle bacilli were found in eighty-six of the one hundred cases before treatment. During the last three months of residence, it was positive in fifty-five of these eighty-six cases. Hemoptysis had occurred in thirty-five of the one hundred cases previous to specific treatment, and occurred in only ten of them during treatment. Hence 72 per cent. of all patients improved, 15 per cent. remained unimproved and 13 per cent. died.

119. **Prognosis in Dementia Præcox.**—As the result of investigation Stearns says the following facts seem worthy of notice: 1. The apparent hopelessness of the disease, dementia præcox, as far as mental health is concerned. 2. The high mortality, especially from pulmonary tuberculosis and other pulmonary affections. 3. The probability of subsequent relapse, even though the patient apparently recovers from the first acute attack. 4. The large number of cases requiring permanent hospital care. 5. The danger of mistaking atypical depressions for catatonic dementia præcox.

New York Medical Journal

August 3, XCVI, No. 5, pp. 205-256

121 *Advantages of Cold Dry Climate in Treatment of Some Forms of Disease. A. D. Blackader, Montreal.
122 Sexual Crimes. A. Flint, New York.
123 Eclampsia: How Shall We Treat It Most Effectively in General Practice? G. W. Kosmak, New York.
124 Modern Ocular Surgery. T. J. Moran, Pittsburgh.
125 Pellagra Sine Pellagra. E. J. Wood, Wilmington, N. C.
126 Epithelioma. R. H. Boggs, Pittsburgh.
127 Tumor Genesis. G. L. Rohdenburg and F. D. Bullock, New York.
128 Edema of Orbits, Secondary to Facial Dermatitis. H. F. Hansell, Philadelphia.
129 Tissue Density Factor. H. Wakefield, New York.
130 Relation of Pelvic Disease in Women to Mental Disturbances. E. A. Schumann, Philadelphia.

121. Abstracted in THE JOURNAL, August 3, p. 394.

Medical Record, New York

August 3, LXXXII, No. 5, pp. 185-230

131 Effect of Specific Treatment on Cerebrospinal Fluid. W. F. Lorenz, Mendota, Wis.
132 Examinations of Eyes of College Students. M. Dresbach, Ithaca, N. Y.
133 Problem of Venereal Prophylaxis. R. A. Bachmann, Newport, R. I.
134 Rectal Administration of Salicylates in Influenza of Infancy. G. W. Beatty, Brooklyn.
135 Modern Medical Clinic: Its Purpose and Its Requirements. W. H. Sheldon, New York.
136 Physical Signs of Pulmonary Tuberculosis Caused by Nasal Stenosis. M. E. Lapham, Highlands, N. C.
137 Ice-Bag and Appendicitis. A. M. Fauntleroy, U. S. A.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

Lancet, London

July 20, II, No. 4638, pp. 135-208

1 Intractable Constipation Treated by Operation. P. L. Mummery.
2 Causes Leading to Educational Deafness in Children. M. Yearsley.
3 *Treatment of Diphtheria Infection by Means of Diphtheria Endotoxin. R. T. Hewlett and A. T. Nankivell.
4 Recent Advances in Our Knowledge of Heart Disease. A. J. Whiting.
5 Relation of Iron to Anemia in Infancy and Childhood. H. T. Ashby.
6 *Improved Classification for Cases of Pulmonary Tuberculosis. F. R. Walters.
7 Observations on Neuron. H. Campbell.

3. Treatment of Diphtheria.—Ordinary cases of faucial diphtheria are not, as a rule, free from infection for a month or five weeks after the onset of the attack. The authors gave diphtheria endotoxin to five such patients while the membrane was still present on the tonsils; all these patients gave practically pure cultures of *B. diphtheriæ*. Between ten days and a fortnight from the date of injection of the endotoxin four of these five patients were free from diphtheria bacilli, and the fifth was free a fortnight later. Most of their patients had harbored the diphtheria bacilli for many weeks or months. After one or more injections of the endotoxin all the patients showed definite improvement. In many the diphtheria infection ceased entirely; in some it persisted, and the patient remained uncured; but even in these unsuccessful cases they noted invariably a diminution in the number of bacilli present microscopically; where previously the swab had given almost a pure culture of the diphtheria bacillus, a few isolated clumps only were found.

With regard to dosage, they began with small quantities of the endotoxin, 0.5 mg. and 1.0 mg.; but their patients treated with these doses did not do so well as subsequently, when they employed an initial dose of 2 mg. At the end of a week or ten days, if the swab was still positive, a dose of 5 mg. was given; and this, if necessary, was repeated later. The dose was the same for children and for adults. No ill effects, except some redness and tenderness around the site of injection, follow the administration of the endotoxin. Only one patient showed any general disturbance, and that merely by a transitory rise of temperature and a feeling of malaise.

6. Classification of Cases of Pulmonary Tuberculosis.—Walters suggests as a basis for the constitutional classification to take the temperature, pulse-rate and weight, making the points of division for temperature at 38 C. (like the American Medical Association) and 38.5 c. (as in the addenda to the Turban classification); for pulse-rate at 90 and 120; loss in weight, being less important, might be subdivided at 10 or 15 kilos. Any case, then, in which the temperature was not over 38 C. per rectum, the pulse-rate not over 90 and the loss of weight on admission not over 10 kilos would fall into the A class of slight constitutional impairment. Any case with temperature over 38.5 C., or pulse-rate over 120, or loss of weight on admission over 15 kilos would fall into the C class of severe constitutional impairment. Intermediate cases would be placed in the B class of moderate constitutional impairment. For inclusion in the A class all three criteria must be favorable. In the same way if one of these exceeds the limits of the B class the case falls into the C class.

Constitutional and local results should be stated separately. Whenever the patient has not been long enough under treatment to insure arrest of the disease, removal from Class B to Class A might be regarded as evidence of moderate improvement, from Class C to Class A as marked improvement, lesser degrees of improvement being recorded as slight. As regards local improvement, disappearance of adventitious sounds, even on cough, from an area the extent of one lobe (provided this be not caused by blocking of bronchial tubes) might indicate marked improvement, from half a lobe moderate improvement, smaller degrees slight improvement. Patients remaining long enough for apparent arrest should pass a test modeled on that of the American Medical Association, viz., absence of constitutional symptoms of disease beyond such dyspnea as is inseparable from loss of lung tissue, permanent absence of râles and crepitations even on cough, free entry of air everywhere, and absence of expectoration ever containing tubercle bacilli. Continuance of these conditions for a twelvemonth to indicate apparent cure.

British Medical Journal, London

July 20, II, No. 2690, pp. 105-156

8 Operations for Cancer of Tongue. W. G. Spencer.
9 *Oxygenation and Tuberculosis. B. Moore.
10 Experience of Dioradin Treatment. C. Wall.
11 Anesthesia by Intratracheal Insufflation of Ether. R. E. Kelly.
12 Acute Epiphysitis. C. M. Kennedy.
13 Appendicitis in Private and Public Hospitals for Insane. J. F. Briscoe.
14 Gastric Adhesions as Cause of Sudden Death. G. H. Winch.

9. Oxygenation and Tuberculosis.—It is the increased movement of the lungs, leading to increased lymph-flow, and hence increased rate of oxygen access to the actual site of the tubercle, which, in Moore's opinion, gives the beneficial action of the fresh air treatment in tuberculosis. Without such a stimulus a patient cannot by voluntary effort in any breathing exercises keep up for any length of time an increased ventilation; he becomes apneic, and the respiration diminishes automatically. For this reason some experimentation would appear necessary on the subject of how best to administer the cool air in draft or puffs over the face so as to keep up the stimulus most effectually and for the longest period, and as to what alternations are of most advantage in such administrations of fresh air. The same effects are at work in the treatment of phthisis by high altitudes, where the oxygen supply is considerably less than at sea-level. Here the patient is compelled vigorously to ventilate the lungs in order to obtain sufficient oxygen, especially if any light exercise be taken. It is certainly not in this case an enrichment of oxygen. But the changed conditions are such as to give more oxygen locally where it is wanted, namely, in the lymphatic spaces of the lungs where the tubercle bacillus is situated. The over-ventilation alternately distending and collapsing the lung tissue sends a rapid stream of lymph along bearing more oxygen in solution past the tubercles. At a high altitude the cooler air also plays its part in inducing increased ventilation of the lung, and the two effects work together.

If this view be the correct one, Moore says the things to be aimed at in treating phthisis are such as will secure increased oxygenation at the site of the tuberculous lesion. This is obtainable by hyperemia of the affected area and increased lymph-flow at that part. The body of the patient should be kept warm, and the face, if possible, subjected to rhythmic applications of cool air at such a rate as to stimulate respiration. Exercise should be indulged in to that extent to which it will somewhat stimulate ventilation without load-

ing up the system with unoxidized products, by making too great a demand on oxidation, and this exercise possibly might best be in the open air, alternated with the cold air applications.

Australasian Medical Gazette, Sydney

May 18, XXXI, No. 20, pp. 517-540

15 Importance of Symptoms in Diagnosis of Phthisis. A. Stewart.
16 Appendicitis in Children. R. B. Wade.
17 Congenital Hypertrophic Pyloric Stenosis. A. A. Lendon.
18 Congenital Pyloric Stenosis. P. L. Hipsley, Waverley.

May 25, XXXI, No. 21, pp. 541-564

19 Romance of Medicine. J. W. B. Bean.
20 Hypernephroma. H. S. Stacy.
21 Still's Disease. W. T. Chenhall.

June 1, XXXI, No. 22, pp. 565-592

22 Osteogenesis Imperfecta. R. B. Wade.
23 *Ectopic Gestation and Transplantation of Human Embryo. J. P. Hastings.
24 Method of Treating Congenital Club-Foot. W. F. Quaife.
25 Thrombosis of Cavernous Sinus; Unusual Complication of Pregnancy. W. Hull.
26 Cesarean Section Following Suspension of Uterus. J. K. Couch.

June 8, XXXI, No. 23, pp. 593-620

27 Hodgkin's Disease in the Light of Modern Research. A. E. Finchk.
28 Lymphadenoma. S. Gillies.
29 *Treatment of Hodgkin's Disease by the Roentgen-Rays. H. Harris.

June 15, XXXI, No. 24, pp. 565-648

30 Muscular Control. N. D. Royle and H. R. G. Poate.
31 Case of Typhoid with Late Infection by Diplococcus. R. Bowman.
32 Septation of Female Reproductive Organs. C. Hall.
33 Treatment of Infantile Club-Feet. M. Herz.
34 Case of Yellow Ochre Dermatitis. W. McMurray.

23. **Ectopic Gestation.**—Under modern aseptic and antiseptic conditions, can we not, asks Hastings, save the fetus? In these early unruptured cases can we not transplant the embryo into the uterine cavity? Let us suppose, he says, that we have exposed, by abdominal incision, an unruptured ectopic sac. Immediately remove it *in toto* and place it in a bowl of normal saline at blood-heat. Open the sac and demonstrate the presence of the embryo. Now place a light clamp on both sides of the uterus, temporarily controlling the blood-supply through the broad ligament. Bisect the uterus in the middle line, exposing its cavity. Now place the embryo in the cavity and close the incision in the uterine wall, as in cesarean section. Hastings has not performed this operation, but he thinks it is quite practical, and would mark a great advance in the conservative treatment of unruptured cases. That it will succeed in suitable cases he is convinced.

29. **Treatment of Hodgkin's Disease.**—About thirty cases diagnosed as Hodgkin's disease have been subjected to the therapeutic effects of the Roentgen rays, either by Harris or under his supervision, during the past fourteen years. In every case arsenic, in varying doses, had been administered beforehand, and the patients were all on the downward grade before they presented themselves for treatment. Improvement followed the rays in practically every case, although several relapsed shortly afterwards. These cases were generally of a very acute type. The most successful cases were those involving single groups of glands and these good results varied in inverse ratio to the number of areas affected. In several cases when the disease was generalized, although one or two localized groups disappeared, the general condition of anemia and asthenia steadily progressed. Again it was noticed that when the mediastinum was involved and consequent dyspnea followed, irradiating the thorax afforded great temporary relief.

British Journal of Children's Diseases, London

July, IX, No. 103, pp. 289-336

35 *Renal Infantilism; Report of Cases. R. Miller and L. Parsons.
36 Hereditary Absence of Patella and Deformity of Nails. A. C. D. Firth.
37 Destruction of Uvula in Vincent's Angina. J. D. Rolleston.
38 Sacral Teratoma Removed from Female Infant Two Days Old. H. A. Lediard.
39 Case of Ulcerative Endocarditis Produced by Pneumococcus in Child Aged Three Years. H. R. Dean.

35. **Renal Infantilism.**—From the consideration of recent cases reported, the authors hold that there can be recognized a type of infantilism associated with, and apparently due to, a perversion of the renal functions. The cases to be included in this group are alike only in that they appear to be due to the perversion of the renal functions, for the evidence shows that the actual condition of the kidneys is not the same in all cases. They think it best, therefore, to adopt for this type of infantilism the title of "renal infantilism." This has the advantages of being sufficiently broad to include all the cases and of bringing the nomenclature of this class into line with that of other known types of symptomatic infantilism which are dependent on the abnormal functioning of other organs, e. g., intestinal, pancreatic or hepatic infantilism. The degree of infantilism present is variable. In most of the cases in which organic renal disease is present it has been marked, the child being of a stature corresponding to a considerably younger age. The mental development usually corresponds to the stature rather than to the age of the patient. Where no organic disease is present in the kidneys the infantilism is of a less severe grade. Genu valgum has been noticed in several of the cases. It may be regarded as evidence of the imperfect osseous development which obtains in other types of infantilism.

Of more interest are the special characteristics of the renal class of infantilism. Of these the most prominent are polydipsia and polyuria. The thirst is severe, and may be the cause of the patient's coming under observation. The polyuria is marked, sometimes extreme, as in one case in which the patient passed in twenty-four hours a weight of urine equal to one-fourth of his body-weight. Bed-wetting, repeated two or three times nightly, is likely to be present. As the result of the polyuria the skin of the patient is very dry and the face rather characteristically wrinkled. The complexion is often of a pale yellow tint. In some cases marked anemia is present. In the group of cases without organic renal changes (diabetes insipidus) all the symptoms are of a less severe type than when chronic renal disease is present. Cardiovascular changes are present in some cases. They consist of hypertrophy of the left ventricle of the heart, heightened blood-pressure, and thickening of the arterial walls, which may be first recognizable in the brachial arteries. Hitherto no case has been materially affected by treatment.

Australian Medical Journal, Melbourne

May 18, I, No. 44, pp. 489-500

40 Electrocardiograph and Its Clinical Application. M. D. Silberly.
41 Case of Ovarian Pregnancy. A. A. Lendon.

May 25, I, No. 45, pp. 501-512

42 Recent Series of 100 Consecutive Celiotomies Performed in Private Practice. J. W. D. Hooper.

June 1, I, No. 46, pp. 513-524

43 Surgical Treatment of Infantile Paralysis. W. K. Hughes.
44 Familial Element in Thyro-Toxicosis (Exophthalmic Goiter). S. Pern.

June 8, I, No. 47, pp. 525-536

45 Glaucoma and Iritis: Differential Diagnosis. J. P. Ryan.
46 Vertex Presentations. W. L. Potter.
47 Case of Heart Massage. L. Lambert.
48 Protracted Labor: Antepartum Sepsis, Death. R. T. Sutherland.

June 15, I, No. 48, pp. 537-548

49 Railway Accidents: Medical Aspect. J. W. Springthorpe.
50 Some Surgical Aspects of Railway Injuries. D. A. Shields.

June 22, I, No. 49, pp. 549-560

51 Value of Temperature Readings in Administration of Diphtheria Antitoxin and Value of Large Antitoxin Dosages. C. V. Mackay.

Dublin Journal of Medical Science

July, I, No. 187, pp. 1-75

52 Remote Effects of Syphilis. H. C. Drury.
53 *Case of Meningitis Due to Bacillus Typhosus. J. O'Carroll.
54 Clinical Report of Rotunda Hospital for One Year, Nov. 7, 1910, to Oct. 31, 1911. H. Jellett, B. A. H. Solomons and D. G. Madill.

53. **Meningitis Due to B. Typhosus.**—This case was one of meningitis due to the *Bacillus typhosus*, but, the authors say, it was one of meningitis primarily, and not a mere complication of a common enteric fever. This is borne out by the post-mortem findings, the absence of ulceration in the intestinal lymphoid tissue three weeks after the illness began and a fortnight after the agglutination test was positive; the absence of enlarged mesenteric glands, and the normal appearance of the spleen. But in the absence of a bacteriologic examination of the stools during life and of the spleen and lungs after death this view cannot be positively maintained. In any event the case is a very unusual one, for though symp-

toms pointing to involvement of the nervous system, such as headache, backache, delirium and tremor, are of common occurrence in typhoid, the number of cases is small in which actual inflammation has been demonstrated in the central nervous system or its ensheathing membranes.

Glasgow Medical Journal

July, LXXCIII, No. 1, pp. 1-79

55 Two Cases of Glandular Enlargement (1) Hodgkin's Disease; (2) Endothelioma. W. K. Hunter and J. H. M'Nicol.
56 *Albumin-Reaction of Sputum in Pulmonary Tuberculosis. R. S. Fullarton.
57 Effects of Chloroform. G. H. Clark.
58 Ether Anesthesia by Intravenous Infusion. F. L. Napier.

56. Sputum in Pulmonary Tuberculosis.—The method followed by Fullarton was practically the same as that employed by previous observers. In every case the sputum, besides being tested for albumin, was also examined for tubercle bacilli. The results obtained suggest the following conclusions: 1. In the great majority of cases of pulmonary tuberculosis the expectoration contains albumin in considerable amount; but in a small proportion of cases little or no albumin is found. 2. In acute bronchitis and pneumonia during the febrile stage, in most cases of pneumonia during the stage of resolution, and in bronchiectasis, albumin is present in the sputum in considerable amount. 3. In cases of bronchial catarrh, in cases of acute bronchitis during the stage of convalescence, in a few cases of resolving pneumonia, and in most cases of chronic bronchitis, whether accompanied or not by asthma or emphysema, the expectoration contains little or no albumin. In a small proportion of cases of chronic bronchitis albumin is present in considerable amount. 4. In cases other than acute (febrile) bronchitis, pneumonia and bronchiectasis, the finding of albumin in considerable quantity in the sputum is, therefore, suggestive of the existence of pulmonary tuberculosis, though it cannot be held to prove it. 5. On the other hand, the absence of albumin from the sputum, or its presence in inconsiderable quantity, suggests, but does not establish, a negative diagnosis. 6. The albumin-reaction is, therefore, not entirely reliable as a test in diseases of the respiratory system and is of only limited value in the diagnosis of tuberculous disease of the lungs.

Malaya Medical Journal, Singapore

May, X, No. 2, pp. 1-57

59 Etiology of Beriberi. A. Holst.
60 Some Factors in Etiology of Insanity. H. J. Gibbs.
61 Beriberi in Pigs. B. D. Mehta.
62 Case of Hepatitis Cured by Ipecacuanha. H. H. King.

Archives Générales de Chirurgie, Paris

June, VI, No. 6, pp. 621-748

63 *Technic for Resection of Rectum and Sigmoid. (Nouveau procédé opératoire pour rétablir la continuité intestinale dans les résections recto-sigmoidiennes étendues.) Q. Vignolo.
64 *Recurrence of Ulcers After Gastro-Enterostomy. (De la récidive des ulcères après la gastro-entérostomie pour sténose non néoplasique due pylore.) C. Moreau.
65 Blood-Borne Erysipelas. (L'erysipèle hématogène.) D. G. Zezas.
66 *The Knee-Chest Position in Treatment of the Vicious Circle Following Gastro-Enterostomy; Two Successful Cases. (2 cas de circulus vicisus traités par la position genu-pectorale.) P. Mauclaire.

63. Plastic Operation With a Stretch of the Ileum After Resection of Rectum.—Vignolo has found that it is possible to mobilize the ileum where its mesentery is longest, and utilize it to substitute the stretch of lower bowel after the rectum and sigmoid flexure have required extensive resection. He gives an illustrated description of the method as he has worked it out on the cadaver and on dogs and applied it in the only clinical case in which conditions called for it. In his clinical case the outcome was excellent although metastasis into the liver forbids hope of long survival. The feces must be completely diverted from the lower bowel by an artificial anus high up, possibly in the transverse colon, to permit the healing of the raw surfaces left from the resection and then after invagination of the stretch of ileum. The interval between the resection and the plastic operation should not be too long, and the latter requires abdominal incision.

64. Recurrence of Gastric Ulcer After Gastro-Enterostomy.—Moreau insists on the grave prognosis when a gastric ulcer recurs after a gastro-enterostomy. The interval is generally five or seven years. Among sixty-three cases on record of recurring ulcer, the ulcers were multiple in four; in eight the recurrence followed the operation, and in three there was ulceration after a second or third operation. The operation for recurring ulcer must conform to the special indications in the individual cases. Moreau has had the ulcer recur in eight of his own twenty-seven operative cases of non-malignant stenosis of the pylorus. In his cases as well as in all on record the patients were men. The persistence or return of the conditions which induced the ulceration in the first place is the explanation of the recurrence, and the technic which favors reflux of intestinal juices removes the cause by neutralizing the excess of acid. Two of his patients have had two recurrences of the ulcer after a Y gastro-enterostomy. One was apparently cured by a second gastro-enterostomy but the other has required four operations and a fifth is now contemplated. These cases are described in detail.

66. Vicious Circle After Gastro-Enterostomy Cured by Knee-Chest Position.—Mauclaire was impressed with the resemblance between conditions in the vicious circle and those of acute postoperative dilatation of the stomach. This analogy between them suggested that possibly turning the patient on his stomach, which measure has proved so successful in certain cases of acute dilatation, might remedy also the vicious circle. The correctness of this reasoning was brilliantly confirmed in two recent cases. Both patients seemed to be doing well until the third and sixth days after a posterior gastro-enterostomy but then they began to vomit bile in constantly larger amounts, one vomiting two liters of bile a day. In two days the condition had become alarming, but Mauclaire then had the patients put in the knee-chest position, with a bolster under the abdomen, and the relief was immediate, the vomiting being arrested almost at once and permanently. There was no fever at any time and the stomach region did not protrude as in case of acute dilatation. To enhance the effect of the position, the trunk was twisted to right and left alternately in addition to being lower at the shoulders. The trouble was evidently of mechanical origin, and he urges a trial of this postural treatment for twenty-four hours before opening the abdomen again in all such cases.

Journal d'Urologie Médicale et Chirurgicale, Paris

May, I, No. 5

67 Temporary Diversion of the Urine in Operations on the Urethra. (La dérivation urinaire temporaire—par l'hypogastre et le périnée—dans les opérations sur l'urètre.) Rochet.
68 What to Do in Cases of Renal Tuberculosis in Which the Condition of the Bladder Prevents Exploration of the Kidneys. (Sur la conduite à tenir dans les cas de tuberculose rénale où toute exploration des reins est rendue impossible par l'état de la vessie.) G. Marion.
69 Reflex Incontinence of Urine as Early Symptom of Tuberculosis of the Kidneys. Constantinesco.
70 Ultimate Outcome of Resection of Pelvis for Intermittent Hydronephrosis. (Résection orthopédique du bassinet pour hydronéphrose à crises intermittentes.) G. Gayet.
71 Horseshoe Kidney. (Considérations sur la pathologie et la chirurgie du rein en fer à cheval.) G. Boiez. Commenced in No. 2.
72 New Cause of Error in Radiography of Kidney Calculi. G. Marion.
73 Hydronephrosis in Horseshoe Kidney. (Hydronéphrose dans un rein en fer à cheval. Urétéropexie; guérison.) R. Grégoire.

Lyon Chirurgical, Lyons

July, VIII, No. 1, pp. 1-120

74 Cancer of the Floor of the Mouth. (Traitement chirurgical du cancer du plancher de la bouche.) M. Vallas and L. Lambert.
75 Cancer of the Cecum. (Cas de cancer coeconappendiculaire observé sur un coecum anormalement mobile et invaginé.) M. Cantas.
76 Cancer of the Prostate. (Traitement opératoire du cancer de la prostate.) G. Gayet.

Presse Médicale, Paris

July 3, XX, No. 54, pp. 569-576

77 Syphilitic Mediastinitis. (La médiastinite syphilitique considérée dans ses rapports avec l'anévrisme de l'aorte.) E. Sergent.

Revue de Chirurgie, Paris

July, XXXII, No. 7, pp. 1-116

78 Extravasated Blood Responsible for Facial Paralysis After Fracture of the Petrous Bone. (Pathogénie de la paralysie faciale secondaire et temporaire dans les fractures du rocher.) H. and A. Mimier.

79 Tuberculous Elephantiasis. H. Gougerot.
80 *Spontaneous Rupture of the Spleen. (Etude des ruptures spontanées de la rate.) S. Johansson.
81 Intramuscular Angiomas. P. Gorse.
82 Temporary Disarticulation of the Last Two Metatarsal Bones in Treatment of Tuberculosis of the Foot. P. Hallopeau.

80. **Spontaneous Rupture of the Spleen.**—Johansson's patient was a previously healthy house painter of 39, free from constitutional taint, who had never been out of Sweden. During the last six months he had felt weak and tired, but there was no pain or vomiting. Finally pains developed below the chest, aggravated by deep breathing, but the man kept at work for a week and then sought the hospital on account of the increasing pain. The spleen was found much enlarged and tender, and in the next two weeks he had three chills followed by fever. An ice-bag was placed on the epigastric region and aceto-salicylic acid was given, with enemas of 100 c.c. of 5 per thousand solution of collargol. An hour after one of these enemas, the pain in the abdomen became intense and the general condition grew rapidly worse, the pulse weak and 140, the abdomen hard as wood, extremely tender, especially low down but there was no distinct localization of the pains. On diagnosis of peritonitis from perforation and internal hemorrhage the abdomen was opened three hours after the onset of the acute phase, and the findings were interpreted as cancer of the stomach which had perforated, with much hemorrhage. Necropsy, however, three days later, revealed spontaneous rupture of the spleen. No cause could be found for it unless the small enema an hour before could be incriminated. There was a concomitant gastric cancer with metastasis, but the hemorrhage came from the jagged surfaces of the ruptured spleen which was four times the normal size. The ulcerating and gangrenous gastric cancer had evidently set up a septic splenitis in an already hypertrophied organ. Death occurred less than seven months after the first symptoms of lassitude and weakness, but the stomach had caused no symptoms until the commencement of the acute disturbances and the man died sixteen days later, three days after the exploratory operation. Johansson reviews a number of cases which he has found in the literature in which a hypertrophied spleen ruptured without external trauma, but the patients had typhoid, malaria or were in advanced pregnancy; his is the only case he has found in which an infected spleen ruptured spontaneously. In most cases the rupture proves suddenly fatal; the patients drop as if an aneurysm had ruptured. A spontaneous cure is possible, but extremely rare; Hengeler found at a necropsy evidences of such an occurrence and Kernig has reported a case of spontaneous cure. The danger of rupture should turn the scale in favor of splenectomy in case of a very much enlarged malarial spleen, and the possibility of rupture of the spleen should be borne in mind when symptoms suggest peritonitis from perforation or intra-abdominal hemorrhage in case of much enlargement of the spleen, especially in typhoid.

Revue Mens. de Gynécologie, d'Obstétrique et de Pédiatrie, Paris

June, VII, No. 6, pp. 353-399

83 *Sea Water Injections in Summer Diarrhea in Infants. (Le plasma marin en injections sous-cutanées dans les gastro-entérites infantiles.) O. Macé and R. Quinton.
84 Sarcoma of the Uterus; Seven Cases. P. Bégouin.
85 Serodiagnosis of Pregnancy. (Intoxications gravidiques et déviation du complément.) E. Vayssière.

83. **Sea Water in Treatment of Summer Diarrhea in Infants.**—Macé and Quinton here bring down to date their report on the treatment of infantile gastro-enteritis by subcutaneous injection of "marine plasma" as they call the sterilized sea water they use for the purpose. They give full page photographs of twelve infants before and after the treatment, and insist that their technic should be followed exactly, as it has given them such good results. They give milk at once with the injections, and regard the strengthening from the milk as an integral part of the treatment; the children are transformed by the injections so that they are able to take care of the milk. Between each feeding they are given a bottle of water or it is fed to them with a spoon, giving as much water as the child will take readily. The amounts of sea water to be injected vary with the nature of the trouble. With enteritis causing constipation, they inject from 10 to 30 c.c. twice a week, feeding the child with from one-eighth to one-sixth of its weight. With athrepsia and ordinary diarrhea, they inject from 30 to 100 c.c. two or three times a week, and feed from one-seventh to one-fifth of the weight. Their photographs are certainly eloquent testimony to the recovery of almost moribund children under this régimen. They published in 1905 a series of experiments including 2,592 days of tests to determine the superiority of sea water over ordinary salt solution for these injections in infants. They found that the infants increased in weight twice as fast under the sea water, and this increase is not due to the weight of the sea water as the increase in weight was out of all proportion to the amount of sea water ingested. Quinton has further published the account of extensive experimental research on dogs. In choleriform enteritis the sea water is injected morning and night in a dose of 200 c.c. or 300 c.c. in the severest cases. From the start the child is given from six to eight bottles of milk a day, each representing 100 gm. of milk to which 20 gm. of water have been added. A bottle of pure water between the feedings completes the treatment, as much water being given as the child will drink. This is kept up for a week and then one injection a day is sufficient. During this first week the child must not take over one-tenth of its weight in milk, but then the amount can be increased to one-eighth or one-seventh. They say that the injected sea water almost invariably restores the digestive capacity in less than two hours so that the infant stretches out its arms for the bottle it previously rejected. The material is tabulated, showing the results in various groups of infants: fourteen brought to the hospital on a strict water diet; twenty-one with frequent vomiting and twenty-one with watery stools free from any matter. One of the tables shows the prompt gain in weight of sixteen infants apparently in the last stage of summer diarrhea. The stools may persist watery even after the child is seen to be thriving well under the sea water treatment. [No directions for procuring or sterilizing the sea water are given. Macé is accoucheur of the hospitals of Paris, and R. Quinton is assistant at the laboratory of pathologic physiology of the Collège de France. The two have worked systematically together. The first communication from them on this subject was summarized in THE JOURNAL, Oct. 28, 1905, p. 1367.]

Revue Pratique d'Obstétrique et de Gynécologie, Paris

May, XX, No. 5, pp. 129-156

86 *The Retinitis of Pregnancy. (La rétinite gravidique.) Rochon-Duvigneaud.
87 *Oxygen in Resuscitation of Asphyxiated New-Born Infants. C. Paul and J. Delmas.
88 *Nascent Iodin Fumes in Gynecology. (L'enfumage iodé en gynécologie.) H. Reynès.

86. **Retinitis of Pregnancy.**—Duvigneaud cites statistics to show the rarity of retinitis of pregnancy and that it generally occurs in primiparæ and in 70 per cent. of the cases it develops during the first four months of the pregnancy. The women have generally had albuminuria for several weeks, with or without prodromal symptoms of eclampsia. He has found records of only four cases in which the poison causing the trouble affected at one and the same time the liver, the brain, the kidneys and the eyes. The prognosis is more serious the earlier the retinitis occurs, as the vision generally grows progressively worse until delivery or until the death of the fetus. If the retinitis becomes aggravated or first develops after delivery, the fundamental cause may be sought in the kidneys. Blindness or very defective vision was the outcome in 13.33 per cent. and death in 11.2 per cent. The nineteen fatal cases were in eight women at term, in four after spontaneous premature delivery, and in three after premature delivery had been induced; the mortality, therefore, in the latter group was only 4.4 per cent. Blindness persisting after delivery is recorded in only 6.1 per cent. of the induced delivery cases, while the proportion was 24 per cent. in the term cases and 13.3 per cent. with spontaneous premature delivery. Detachment of the retina is a frequent complication but it is generally curable; it was bilateral in 78 per cent. of the cases in which it occurred. The women were left with more

or less impairment of vision after the retinitis in 130 cases, that is, in 77 per cent. In nineteen cases the retinitis recurred at a later pregnancy and then entailed blindness in five, and nine patients died. Treatment is mainly prophylactic; the ophthalmologist is frequently able to detect signs of retinitis before albumin appears in the urine. With established retinitis, the treatment should be the same as for eclampsia; venesection, sedatives and restriction to milk or water, but the indications for immediate interruption of the pregnancy are much more imperative with retinitis than in eclampsia alone. The uterus must be evacuated to save vision or even life. The child has only 20 per cent. chances for survival at best.

87. Already summarized in these columns July 6, 1912, p. 73.

88. **Iodin Vapors in Gynecology.**—Reynès reports very favorable experiences with Louge's method of generating nascent iodin in the vapors of burning iodoform, recently described in these columns. It is proving effectual in treatment of torpid ulcerating lesions, lymphadenitis, caries, etc., old ear disease, syphilitic ulcerations and soft chancres. The torpid ulcers are first curetted. The results have been so good that Reynès has been striving to apply the method to gynecologic lesions, as he describes in detail. The simplest technic for this is to dip a wad of cotton, held with forceps, into the iodoform and take up as much as it will readily hold. The cotton is then lighted and as soon as the iodoform has burned away the tampon sending out the amethyst vapors is pushed deep into the vagina and held in place with a gauze or cotton plug. Or the vapors can be applied through a tube. He repeats the procedure twice a week.

Archiv für klinische Chirurgie

XCVIII, No. 3, pp. 579-842. Last indexed July 20, p. 230

89 Gangrene After Resection of Rectum. (Zur Frage der Gangrän des oralen Darmstumpfes nach Mastdarmresection.) K. Veber.
90 Operative Treatment of Nephritis. (Zur Chirurgie der Nephritis.) H. Kümmell.
91 Experimental Gastric Ulcer. (Experimentelle Erzeugung der Magengeschwüre.) T. Suzuki.
92 Treatment of Traumatic Injury of the Hip Joint. (Zur Behandlung der Coxa vara traumatica mittels Reposition und Extension.) O. Sprengel.
93 Colon-Bacillus Infection of the Kidney. (Coliinfectionen der Niere.) Münnich.
94 Combined Technic for Removal of Rectal Cancer. (Die combinirte Methode der Exstirpation des Mastdarmcarcinoms mit präventiver peritonealer Abdeckung.) E. R. Goepel.
95 Operative Treatment of Sagging and Dilated Stomach. (Ueber die chirurgische Behandlung der mit Erweiterung einhergehenden Ptosis des Magens.) S. F. Dejrushinski.
96 *Ultimate Outcome After Resection of Middle Segment of Stomach; 18 Cases. (Das jetzige Verhalten von 18 wegen Ulcus curvat. min. mit Entfernung. des mittleren Theiles vom Magen behandelten Kranken.) B. Riedel.
97 *The Two-Route Method of Treating Wounds and Ulcers. (Erfahrungen über Wund- und Geschwürbehandlung mit der Pfannenstill'schen Methode bei nichttuberculösen Affectionen.) A. von Reuterskiöld.
98 Free Transplantation of Tendons. (Verwerthung der freien Sehnentransplantation.) E. Lexer.
99 Pressure on the Brain. (Zur Frage des Hirndrucks.) O. Tilmann.
100 Physiology and Pathology of the Circulation in the Lungs and Its Importance for Operations on the Thorax. M. Cloetta.

96. **Ultimate Outcome After Resection of Gastric Ulcer.**—Riedel has been examining eighteen patients anew to determine whether a new ulcer or cancer developed in any after resection of an ulcer in the lesser curvature. Four were found entirely well and fourteen wrote, or their physicians wrote for them, that they were healthy. All have their earning capacity unimpaired. One woman, now 72, was operated on eleven years ago. The middle segment of the stomach had been resected in each case; in some this had been done after a gastro-enterostomy which had failed to relieve. The details of the cases are tabulated and the technic described.

97. **The Two-Route Method of Treating Wounds and Ulcers.**—Reuterskiöld reports systematic application of Pfannenstiel's method in infectious affections of non-tuberculous origin and extols the results as extremely satisfactory. It acts on both acute and chronic processes transforming the infections into aseptic lesions. Rhinologists and lupus specialists have found the method remarkably effective in their work and it is especially useful for superficial abscesses, felons, etc., as an adjuvant to operative measures. (See THE JOURNAL, Aug. 5, 1911, p. 520.)

Deutsche medizinische Wochenschrift, Berlin

July 11, XXXVIII, No. 28, pp. 1313-1360

101 *Goiter and Its Treatment. (Ueber Kropf und Kropfbehandlung.) T. Kocher. Commenced in No. 27.
102 *Roentgenoscopy of the Intestines on a Test Bismuth Daily Ration. (Röntgenuntersuchung des Darmes auf Grund einer Kontrast-Normal-Diät.) G. Schwarz.
103 Action of Opium Alkaloids on the Intestine Living Outside of the Organism. (Wirkung der wichtigsten Opiumalkaloide auf den überlebenden Darm.) E. Popper and C. Frankl.
104 *Sterilization of Bacillus Carriers by Active Immunization. (Erfolgreiche Versuche zur Entkeimung von Bazillenträgern durch aktive Immunisierung und die hygienischen Konsequenzen.) J. Petruschky.
105 Intra-Partum Infection. (Ueber Infektion und Infektionsfieber intra partum.) E. Sachs.
106 Premonitory Symptoms of Thrombosis. (Zur Frage der prämonitorischen Symptome der Thrombosen bzw. Embolien.) F. Kraemer.
107 Cultivation of the Spirochæta Pallida. (Reinzüchtung der Spirochaeta pallida.) H. Nakano. (Reinzüchtung der Syphilisspirochäten.) J. Schereschewsky.
108 Sanatorium Treatment of Surgical Tuberculosis. O. Vulpius.
109 Anesthesia of the Tympanic Membrane. (Trommelfellanästhesie.) N. R. Blegvad.
110 Frequent Transient Loss of Consciousness in Aviation. (Bewusstlosigkeit im Luftschiff.) F. J. Flemming.

101. **Goiter.**—This postgraduate lecture by Kocher, the great authority on goiter, brings the subject down to date. He emphasizes the importance of early differentiation of thyroid disease, saying that he has encountered many cases in which patients had been treated for months or years for anemia, and had taken all kinds of treatment for the symptoms of the supposed anemia, the white tint around the eyes, nose and mouth, the puffy aspect of the face, the chilliness of which they complained, the constant lassitude which rendered all physical or mental effort too much of a strain, the small pulse and a certain irritability—all of which form part of the syndrome from defective thyroid functioning and have nothing to do with anemia. All the tonics in the world cannot supply the missing thyroid secretion, while such patients begin to thrive at once on thyroid treatment. On the other hand, persons with incipient exophthalmic goiter, excitable, inclined to insomnia and ready fatigue, palpitations at the least effort or emotion, are regarded as neurasthenic, and are treated with sedatives and heart tonics which are of little if any help as they are unable to arrest the flooding of the organism with the toxic products of the perverted thyroid functioning. The proper differentiation of thyroid disturbances throws light on many conditions and gives the clue to treatment for which we have long been seeking in vain. Rapid growth of a goiter is usually a sign of malignant disease, as also when it grows tough and hard, possibly only at certain points of the goiter. When both of these are observed at the cancer age, the diagnosis is almost certain, especially when they follow disturbance in swallowing and pains in the back of the head, shoulder and behind the ear. Local tenderness and recurrent or sympathetic paralysis are also important signs of cancer. Kocher remarks that not only the postponing of an urgent operation is a sin, but that it is a sin to give iodin treatment without discrimination or concern in every case of thyroid disease. The iodin treatment not only wastes time and allows the day for successful operative measures to slip past, but the iodin itself is liable to do direct harm and bring on the symptoms of exophthalmic goiter, actual iodin Basedow. He states that he has not lost a patient in the course of 736 operations for ordinary goiter for which the operation could be considered in any way responsible. In March of this year he did his five thousandth operation on the thyroid. He says in concluding that the physician can advise an operation with a quiet mind in every case of goiter increasing in size and causing stenosis or accompanied by heart disturbances, and it is his duty to advise the operation early and not wait until complications develop which render the outlook less promising. Still more urgent are the indications when the blood-picture, radiography and other diagnostic measures show abnormally exaggerated functioning of the thyroid. Iodin treatment and thyroid extract should be reserved for the cases free from stenosis, the goiter not growing rapidly, and the symptoms indicating deficient thyroid functioning. Here a rational and specific internal treatment gives as brilliant results as surgical treatment in the thyrotoxic cases.

102. **Improved Technic for Roentgenoscopy of the Intestines.**—Schwarz thinks that much better oversight of intestinal

functioning is possible if, instead of the bismuth or other contrast suspension being given at one time, it is given with three test-meals in one day. He applies roentgenoscopy again and again until the last trace of the bismuth has been eliminated. The findings on this test ration are thus far more instructive, as he shows by the radiographs over several days of a healthy young man on test diet.

104. **Sterilization of Typhoid-Bacilli Carriers.**—Petruschky is director of the hygienic institute at Danzig and city physician, and he has succeeded in having the rule made that patients convalescent from diphtheria shall be kept at the hospital until the throat and nose are free from diphtheria bacilli. This he regards as great progress, the town having had sad experience on various occasions of the necessity for the measure. When the bacilli persist in the nose and throat beyond the usual period and the patients are seen to be becoming chronic carriers, he has succeeded in banishing the bacilli by two or three injections of a suspension of the patient's own bacilli killed by fumes of chloroform applied for several hours. In eight cases described in detail the desired effect was realized in every instance; in the recent cases only two or three injections were necessary and the patients were permanently sterilized. But in one chronic carrier, a child of 9, who had no history of diphtheria but had been subject to colds, coughs and pains in the chest for years, diphtheria bacilli were found on and in the tonsils, and necrotic plugs expelled from the tonsils invariably contained bacilli, showing that the bacteria were ensconced within. This case was most discouraging and he had long given up all hope but still made an occasional injection and finally, fourteen months after the first of the twenty-one injections, no further traces of diphtheria bacilli could be found in the child. She had been suspected of tuberculosis but no tubercle bacilli were found at any time. In another chronic carrier, a man of 23, four months and eight injections were required before the diphtheria bacilli disappeared from throat and nose. He had no history of diphtheria and applied for examination on account of symptoms suggesting tuberculosis. Petruschky in a more recent case has applied the bacillus suspension by rubbing it into the skin, suspended in glycerin or in the form of a salve, and in six weeks the bacilli had disappeared. This patient was a frail woman of 31 with no history of diphtheria but with symptoms suggesting tuberculosis; the tuberculin reaction was positive but there were no tubercle bacilli or lung findings. A test injection of a neutral fluid proved so painful that this method was abandoned and two drops of the glycerin suspension were rubbed into the forearm at a different point on alternate days. By the sixth week no further diphtheria bacilli could be discovered and the patient gained ten pounds in three months. He advocates applying this simple inunction method for active immunization of every child whose bacilli linger in the throat after convalescence and two weeks of the ordinary gargles and other measures. The parents would seldom object to this inunction method. Petruschky adds further that for ten years he has been applying this active immunization method in prophylaxis when conditions seemed to compel special preventive measures. No untoward by-effects were observed in any instance, but he does not discuss this phase of the subject in detail. In conclusion he reports application of the same principle to typhoid; in his experience to date, none of the typhoid patients treated in this way was left a carrier.

Medizinische Klinik, Berlin

July 14, VIII, No. 28, pp. 1139-1180

111 Diuretics. (Diuretische Heilmittel.) A. Mayor.
112 Syphilis and Contracted Kidney. (Syphilis und Schrumpfniere.) C. Hirsch.
113 Roentgenoscopy of Non-Surgical Disease of the Stomach. (Die röntgenologischen Symptome der nichtchirurgischen Magenerkrankungen.) F. M. Groedel and E. Schenck.
114 Asthma. R. Cholewa.
115 Radium Emanation and Radio-Active Waters. (Radiumemanation und Brunnengeist.) P. Lazarus.
116 Necrosis of Hand from Aluminum Acetate Dressings. (Nekrosen an der Hand infolge Anwendung von Umschlägen mit essigsaurer Tonerde.) Esau.
117 Infant Mortality in Connection with Housing Conditions. (Die Lokalisation der Säuglingssterblichkeit in Berlin und ihre Beziehungen zur Wohnungsfrage.) H. Liefmann and A. Lindemann. Commenced in No. 27.
118 *Symposium on Decapsulation of the Kidneys. (Umfrage über die Entkapselung der Niere bei akuter und chronischer Nierenentzündung.) Commenced in No. 27.
119 Cholin in Chemotherapy of Cancer. (Ueber die chemische Imitation der Strahlenwirkung und Chemotherapie des Krebses.) R. Werner. (Wirkung von Cholinsalzen auf das Blut und über die Beeinflussung von Mäusetumoren durch kolloidale Metalle.) S. Szecsi.

118. **Decapsulation of the Kidneys in Acute and Chronic Kidney Disease.**—This is a symposium on the subject, the editors having sent a question blank to a number of surgeons in Germany asking them what success they had had in this line and how they explained it. Favorable reports were received from Kümmell, Friedrich, Ritter and Pels-Leusden, but the others have little to say in favor of the measure, the effects in their cases having been transient or no benefit apparent. Anschütz states that no improvement was realized in any of his ten cases, neither the anuria, the uremia or acute nephritis showing any benefit, and no benefit was apparent in a case of chronic nephritis from double decapsulation.

Münchener medizinische Wochenschrift

July 9, LIX, No. 28, pp. 1529-1584

120 Iron Content of Milk. (Ueber den Eisengehalt der Frauen- und Kuhmilch.) F. v. Soxhlet.
121 *Early Operation in Exophthalmic Goiter. (Die Frühoperation bei Morb. Basedowii.) B. Riedel.
122 Diagnostic Intracutaneous Reaction to Extract of Spirochetes. H. Kämmerer.
123 Anaphylactic Reaction of the Lungs. H. Ströbel.
124 *Connection Between the Lungs and Genital Organs of Tuberculous Women. (Beziehungen zwischen Lunge und Genitale tuberkulöser Frauen.) H. v. Bardeleben.
125 Action of Opium. (Zur Opiumwirkung.) H. Schmidt.
126 Success of Combined Physical Measures in Treatment of Cancer; One Hundred Cases. (Therapeutische Erfahrungen an 100 mit Kombination von Röntgenstrahlen und Hochfrequenz, resp. Diathermie behandelten bösartigen Neubildungen.) C. Müller.
127 Hyperpyrexia; Two Cases. (Einige bemerkenswerte Fälle aus der Prosektur.) R. E. v. Pessl.
128 By-Effects with Hormonal and Pituitrin. (Ueber unerwunschte Nebenwirkungen bei Hormonal und Pituitrininjectionen.) H. Bovermann.
129 Brace for Scoliosis. (Eine elastische Bandage zur Behandlung mobiler Skoliosen.) B. Baisch.
130 The Eclampsia Toxin in the Placenta. (Das Eklampsiegift in der Plazenta.) W. Liepmann.
131 The Campaign Against Quackery. (Was nun in der Bekämpfung der Kurpfuscherei?) O. Neustätter.

121. **Importance of Early Operating in Exophthalmic Goiter.**—Riedel protests against regarding operative treatment of exophthalmic goiter as only to be undertaken after failure of all other measures. In his experience with over a hundred operative cases the patients find after an operation in an advanced stage that their nervous excitement subsides, as also the tremor, the heart gradually becomes more tranquil and the patients gain rapidly in weight but the eyes still protrude, so that although the patients feel well yet others do not regard them as cured. The outcome is entirely different when the operation is done in an early stage. This restores the patients to apparently complete health, as in two of his recent cases in which the attending physician diagnosed the affection early and the patients were willing to be operated on at once—a rare combination. They were women of 28 and 30; each was at the head of a large boarding house and their trouble began with a sense of weakness and loss of weight. In the younger woman the affection made rapid progress, the patient losing forty pounds in weight and becoming extremely depressed and the heart unruly. There was no tremor or exophthalmos and only a moderately enlarged thyroid when the patient was operated on, three months after the first disturbances had been noted. In the second case the only symptoms were weakness and the "blues" with recent enlargement of the thyroid in the course of a few months to the size of an egg on one side, but no exophthalmos and only slight participation on the part of the heart. The weakness and depression had been noticed for three or four years and the operation followed a few months after the thyroid had showed signs of increasing. The reaction to the operation in this second case was very slight; it was more pronounced in the first, more acute case. Both patients have been entirely cured for years. Another patient, a man of 40, was taken sick first with the other members of the family with a diarrheic trouble for a week; it left him with great weakness and a tendency to intense sweats, and aphonia for three weeks. Then palpitations followed and the eyes

became more prominent and the man was unable to work. Physicians consulted treated him for "neurasthenia" and sent him to a watering place where he lost ten pounds and was tormented with extreme thirst, tremor in the hands, pains in the legs, especially in the knees, and great depression. Then a physician suggested exophthalmic goiter but this was negatived by the surgeon consulted as there was no sign of a goiter. Various methods of treatment were applied but to no avail and finally the thyroid was resected, which placed the patient on the direct road to recovery at once. If he had been watched while he was swallowing, the small tumor formed by the retrosternal enlarged thyroid would have been detected. Even without any signs of goiter, the possibility of goiter should always be suggested when a patient complains of weakness and mental depression for which no other cause can be discovered. The blood should be examined for the increase in lymphocytes and decrease in leukocytes characteristic of exophthalmic goiter. The diagnosis made, Riedel advises operating at once without waiting for violent palpitations and exophthalmos to develop. He has become more and more radical in his resection with greater experience, now cutting away fully nine-tenths of the thyroid but always leaving some thyroid tissue on both sides. In conclusion he describes the case of a woman of 35 who found she was losing weight and growing weak but there were no palpitations. The third month she noticed a small lump in the suprasternal fossa one morning; by noon it was the size of two fists and during the afternoon she had palpitations for the first time and felt a distinct buzzing in the thyroid. The eyes began to protrude and the hands to tremble, all in the course of a few hours. After a week in bed the symptoms were somewhat mitigated but grew still more severe after she had been up two weeks; the heart was especially rebellious. Under thyroid extract the palpitations grew still worse, and there were occasional chilliness and pain in the eyes but prompt and progressive improvement followed thyroidectomy. Riedel has observed a similar buzzing in the thyroid of a man of 50 who also developed acute enlargement of the thyroid with goiter symptoms.

124. Summarized in THE JOURNAL, Aug. 3, 1912, p. 404, abstract 3.

St. Petersburger medizinische Zeitschrift

June 14, XXXVII, No. 11, pp. 161-177

132 Psychotherapy in Daily Practice. (Die Psyche des Patienten.) H. Hirsch.
133 Hygiene of the Nursing Mother. (Die stillende Mutter.) V. Schroppe.
134 Vasomotor Influences Responsible for Pulsus Differens with Mitral Stenosis. (Eine neue Ansicht über die Entstehung des Pulsus differens bei Stenose des linken venösen Ostiums.) D. O. Krylow.

June 28, No. 12, pp. 179-191

135—Uncrossed Paralysis After Gunshot Wounds; Eight Cases. (Ungekreuzte—kollaterale—Lähmungen.) O. Holbeck.
136 Tapeworm and the Gastric Secretion. (Der breite Bandwurm und die Magensaftsekretion.) J. Grönberg.
137 Injury of Eyes from Watching Eclipse. (Ueber Blendungsveränderungen durch Sonnenlicht.) G. Ischreyt.

Wiener klinische Wochenschrift, Vienna

June 27, XXV, No. 26, pp. 991-1034

138 Experimental Research on the Pulsus Paradoxus. E. Hoke.
139 *Sarcoma of the Stomach. (Fall von primärem Sarkom des Magens. Resektion. Heilung.) E. von Graff.
140 The History of Vaccination Against Small-Pox. (Zur Frage der Impfbelehrung.) R. W. Raudnitz.

139. **Gastric Sarcoma.**—The case reported is stated to be the fifty-sixth on record in which the stomach was resected on account of a primary sarcoma. The outcome is known for only three of the eight patients who survived the operation or its complications among the twelve treated by radical resection of the growth. Among them is Dock's patient (THE JOURNAL, 1900, xxxv, 156), known to be in good health four years afterward. Of the twenty-eight patients treated by resection of an exogastric sarcoma, the outcome is known in only nineteen cases, and only three of these patients were free from recurrence after a three-year interval. The patient in the present case was a woman of 27 who began to have occasional attacks of weakness but felt otherwise well and perfectly healthy at other times. After two years her waist grew larger while she found she had lost fifteen pounds. By the end of the third year a large tumor had made itself apparent in the lower abdomen, reaching to the umbilicus, but there was no anemia, dyspepsia or constipation. The tumor grew out of a small segment of the greater curvature of the stomach and had developed between the sheets of the gastrocolic ligament. It was easily removed by resecting a small part of the stomach with it, and the patient has seemed quite well during the four months since, but the enlarged lymph-nodes in the region give cause for concern.

Zentralblatt für Chirurgie, Leipsic

July 13, XXXIX, No. 28, pp. 945-984

141 Resection of Tuberculous Knee. (Zur Technik und Nachbehandlung der Resektion tuberkulöser Kniegelenke.) B. Riedel. (Zur Nachbehandlung nach Knieresektion.) W. Merkens.
142 *A New Esophagoscope. R. Lewisohn (New York).

142. **Esophagoscope.**—Described with illustrations in THE JOURNAL, Nov. 18, 1911, p. 1681.

Zentralblatt für Gynäkologie, Leipsic

July 13, XXXVI, No. 28, pp. 913-942

143 Pregnancy Dermatosis Cured by Serum from Umbilical-Cord Blood. (Mit Nabelschnurblutserum geheilte Schwangerschaftsdermatose.) R. Franz.
144 Operative Treatment of Extensive Genital Prolapse. G. A. Wagner.
145 Primary Echinococcus Cyst in Space of Douglas Interfering With Delivery. (Echinokokkus retrocervicalis extraperitonealis als Hindernis zur Spontangeburt.) L. Gussakow.
146 Mixed General Anesthesias for Gynecologic Operations. (Pantopon-Skopolaminnarkose bei gynäkologischen Operationen.) Putjatina.

Zentralblatt für innere Medizin, Leipsic

July 13, XXXIII, No. 28, pp. 693-716

147 Determination of Pentoses in Diabetic Urine. (Nachweis der Pentosen in diabetischen Harnen.) A. Jolles.

Semana Medica, Buenos Aires

June 6, XIX, No. 23, pp. 1045-1088

148 *Paraffin Prothesis. (Protesis nasal externa.) J. de la Cruz Correa.
149 Examination of the Stools. (Examen de las heces.) M. Acuña.
150 Syphilis of the Stomach. (Caso de sifilis del estomago.) L. Villacian and F. A. C. Bazan.

148. **Paraffin Prothesis.**—Correa gives illustrations of several patients three or four years after he had injected paraffin to correct deformity of the nose. The outcome has been excellent, the paraffin deposits showing apparently no change during the years that have elapsed. He uses paraffin with a melting point of 45 C., softened by pressure for the injection. The pressure is exerted by the special syringe used in which the piston is pushed inward by turning a thumb screw. No complications were observed in any of his seventy-five patients injected with the paraffin to restore the shape of the nose or aid in the cure of ozena.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 4, XXXIII, No. 80, pp. 825-832

151 *Intermittent Fever in Tertiary Syphilis. (Sulla febbre intermittente nella sifilide terziaria.) P. Pozzilli.

July 7, No. 81, pp. 833-848

152 Normal Production of Lymph and Edema. (La linfogenesi normale e l'edema.) F. Bottazzi.
153 Aortic Aneurysm. (Grosso aneurisma della regione diaframmatica.) M. Pavesi and E. Curti.

151. **Intermittent Fever in Tertiary Stage of Syphilis.**—Pozzilli has found intermittent fever not a rare occurrence in the tertiary phase of syphilis, and he reports three cases in detail. He applied mercurial treatment by intravenous injection of mercuric chlorid, and the patients were promptly cured. In one case the syphilitic lesions involved the lungs, in the others the liver or bones. The long interval since the infection and the intermittent fever rendered the diagnosis very uncertain until the success of the mercurial treatment cleared up all doubts. Pozzilli thinks that mercury in this form acts like a vaccine, the opsonic index and the leukocytes showing marked changes under it.

Hospitalstidende, Copenhagen

July 10, LV, No. 28, pp. 785-808

154 Alimentary Levulosuria Unreliable Test in Diagnosis of Liver Disease. (Om Frugtsukkerets alimentære Forekomst i Urinen og Betydningen deraf ved Leversygdommes Diagnose.) K. A. Helberg.